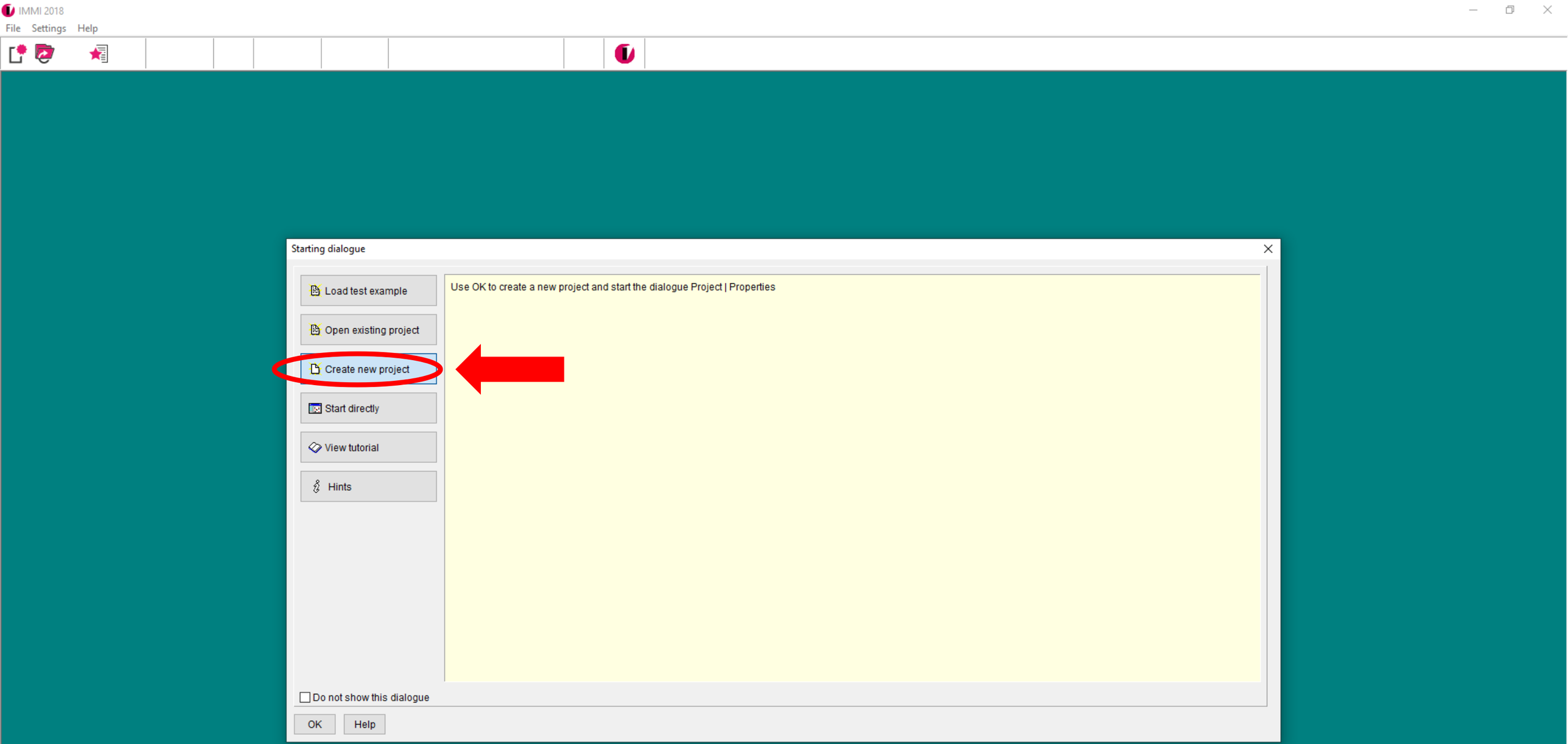
IMMI

IMMI – First Steps into the World of Noise Mapping

Wölfel

IMMI

The aim of this tutorial is to provide you with an introduction to the practical applications of IMMI through examples.



Start IMMI, choose **Create new project**.

IMMI 2018

File Settings Help

Starting dialogue

Load test example

Open existing project

Create new project

Start directly

View tutorial

Hints

Use OK to create a new project and start the dialogue Project | Properties

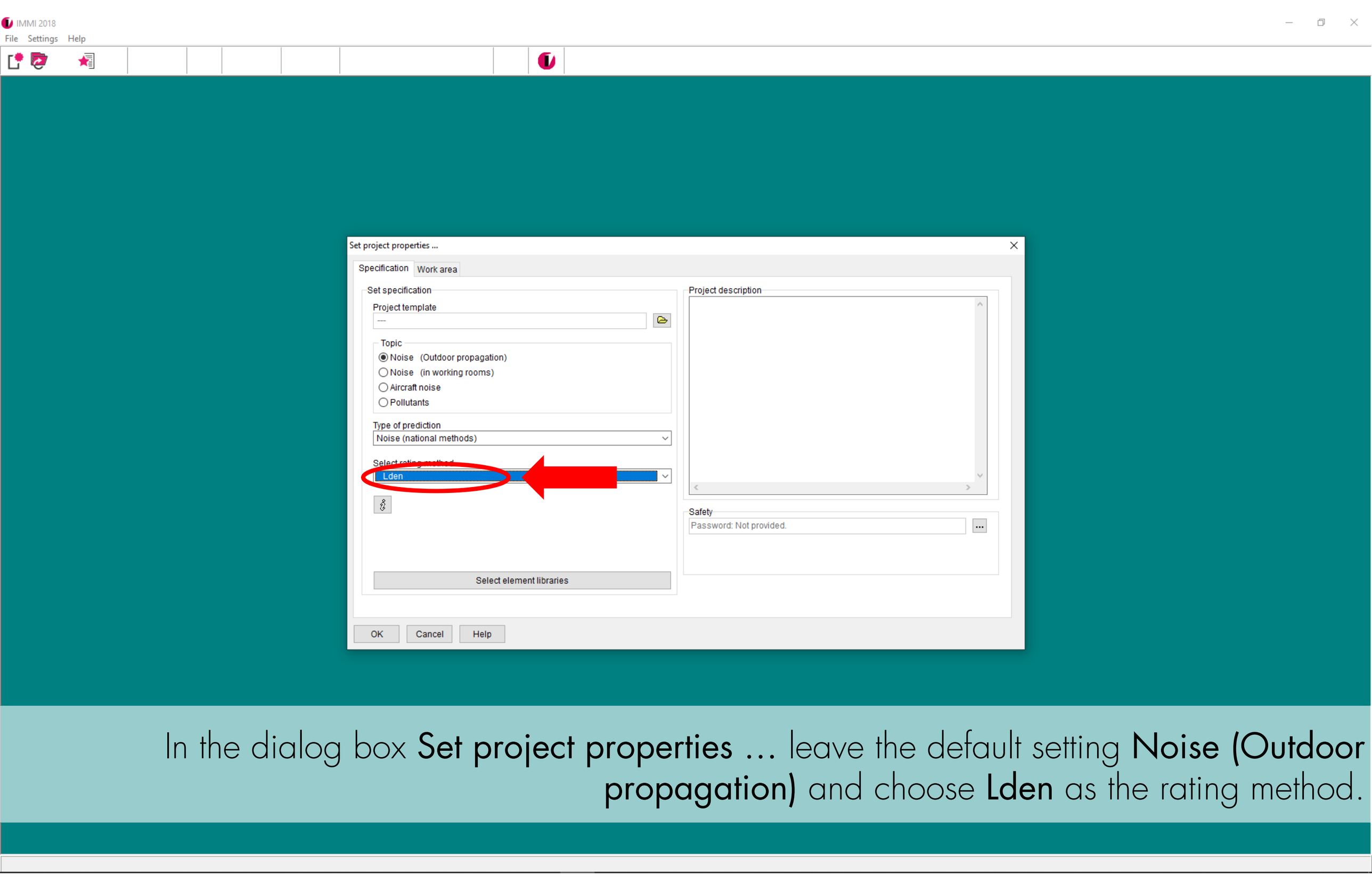
Do not show this dialogue

OK

Confirm with **OK**.

IMMI 2018

File Settings Help



In the dialog box **Set project properties ...** leave the default setting **Noise (Outdoor propagation)** and choose **Lden** as the rating method.

IMMI 2018

File Settings Help

Set project properties ...

Specification | Work area

Set specification

Project template

Topic

- (•) Noise (Outdoor propagation)
- ( ) Noise (in working rooms)
- ( ) Aircraft noise
- ( ) Pollutants

Type of prediction

Noise (national methods)

Select rating method

Lden

Select element libraries

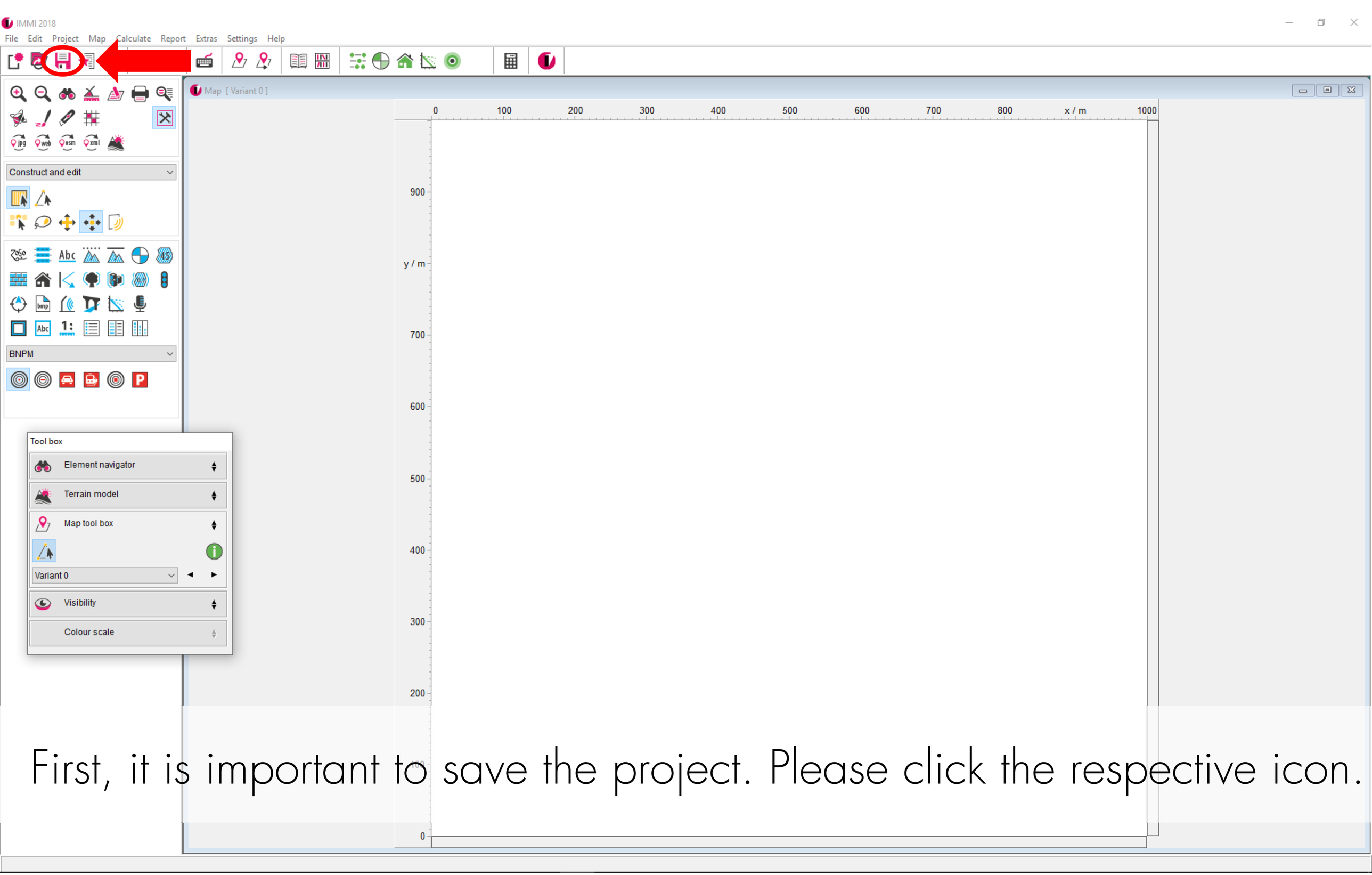
Project description

Safety

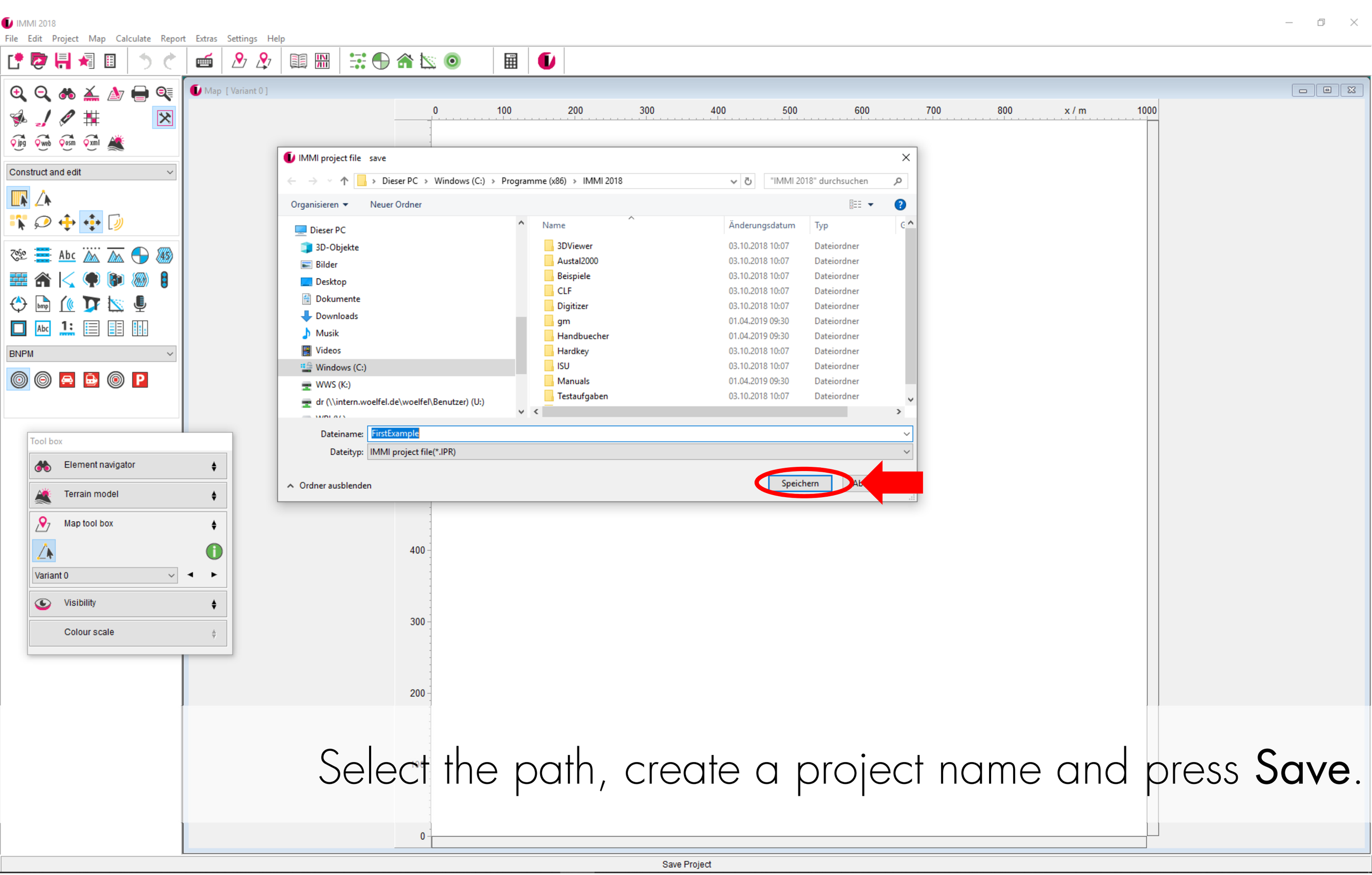
Password: Not provided.

OK

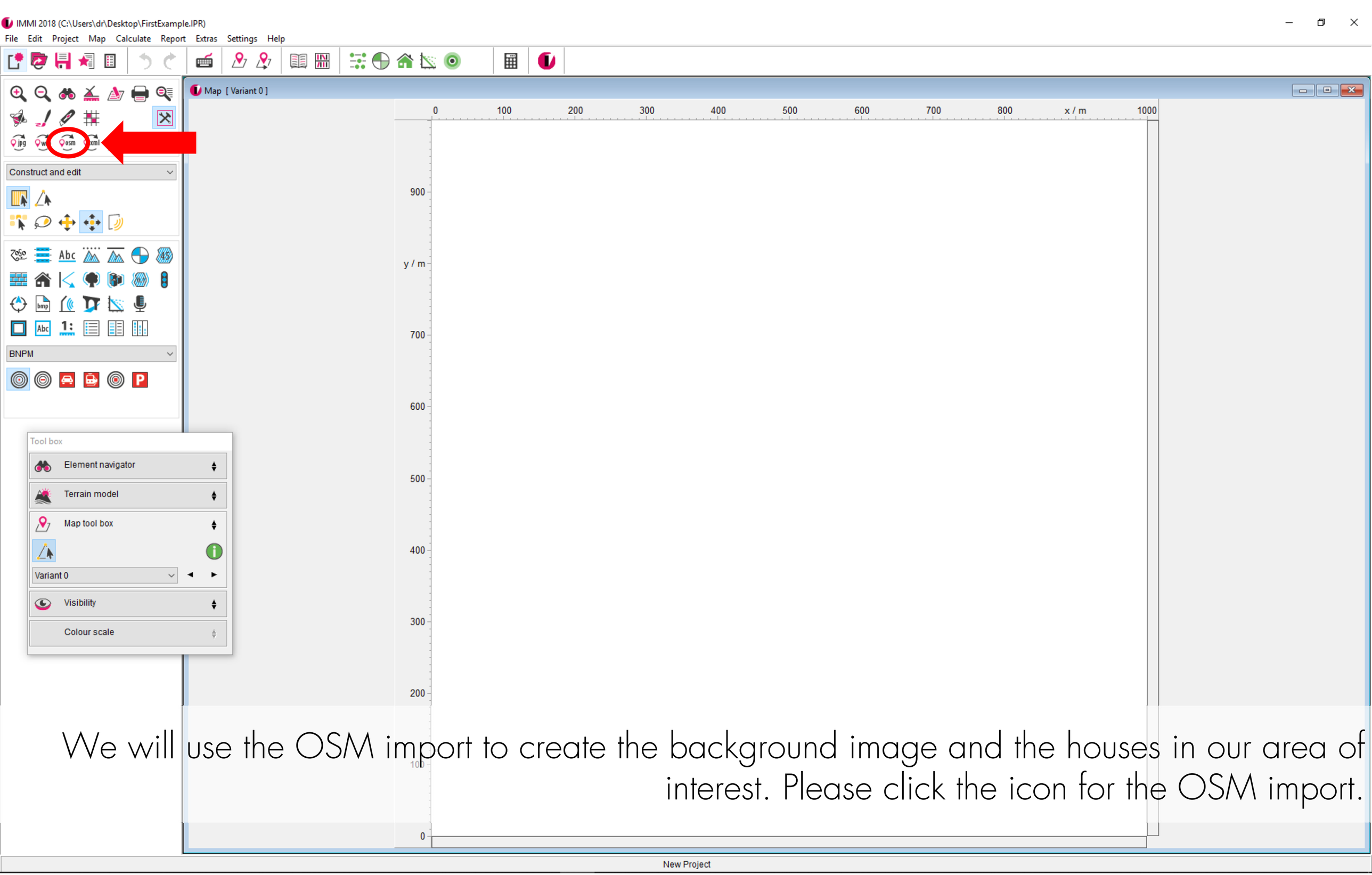
Confirm with **OK**.



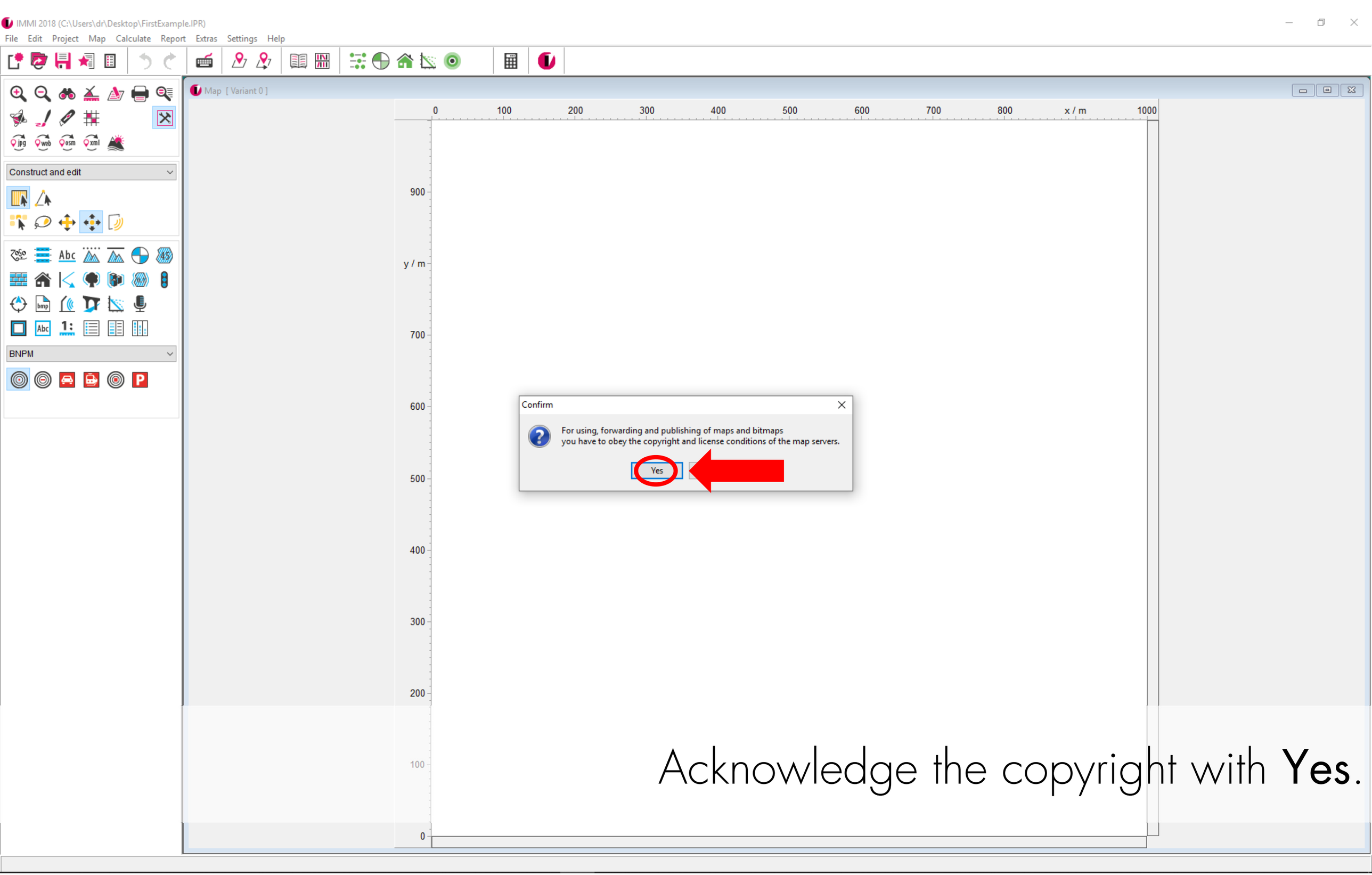
First, it is important to save the project. Please click the respective icon.



Select the path, create a project name and press **Save**.

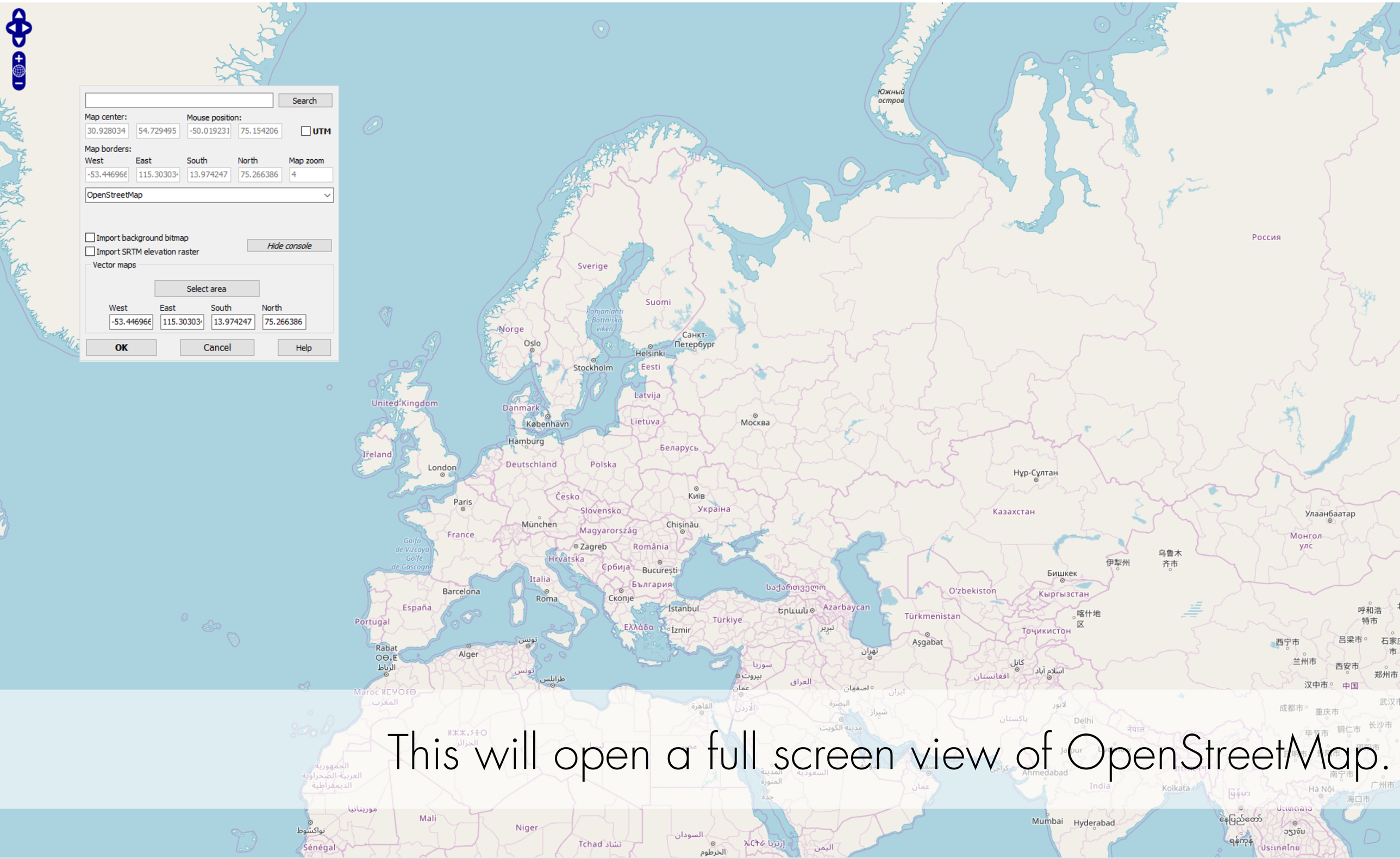


We will use the OSM import to create the background image and the houses in our area of interest. Please click the icon for the OSM import.



Acknowledge the copyright with **Yes**.

IMMI 2018 - Map import



This will open a full screen view of OpenStreetMap.

IMMI 2018 - Map import

Höchberg | Search

Map center: 9.881117 | 49.783749 — Mouse position: 9.802410 | 49.813361 — UTM

Map borders:

West	East	South	North	Map zoom
9.798720	9.963515	49.751235	49.816242	14

OpenStreetMap German Style

Import background bitmap
Import SRTM elevation raster
Hide console

Vector maps

Select area

West	East	South	North
9.798720	9.963515	49.751235	49.816242

OK | Cancel | Help

Enter the desired location of the project – in our example **Höchberg** – and press **Search**.

Use the mouse to navigate to the industrial area southwest of Höchberg and zoom in to obtain a reasonable work area.

IMMI 2018 - Map import

Activate **Import background bitmap** and confirm with **OK**.

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0]

0 100 200 300 400 500 600 700 800 x / m 1000

900

200

100

0

Import OSM file

import

Step 1: Search card features / Import presets

	Type of element	Replacement value for building height [m]
☑ buildings		10,00
☐ streets	StCN - road /CNOSSOS-EU - 142	
☐ rail	SCHv - Railway /CRN (GB)	
☐ land use	HLIN - Help line	
☐ land cover	DBod - Ground effect	

☐ all remaining map features as optical elements

☐ Subordinate main map features (houses, streets, rails) as optical elements

Search map features in file

Step 2: Final selection and import

Import

OK Cancel Help Open setup Store setup

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

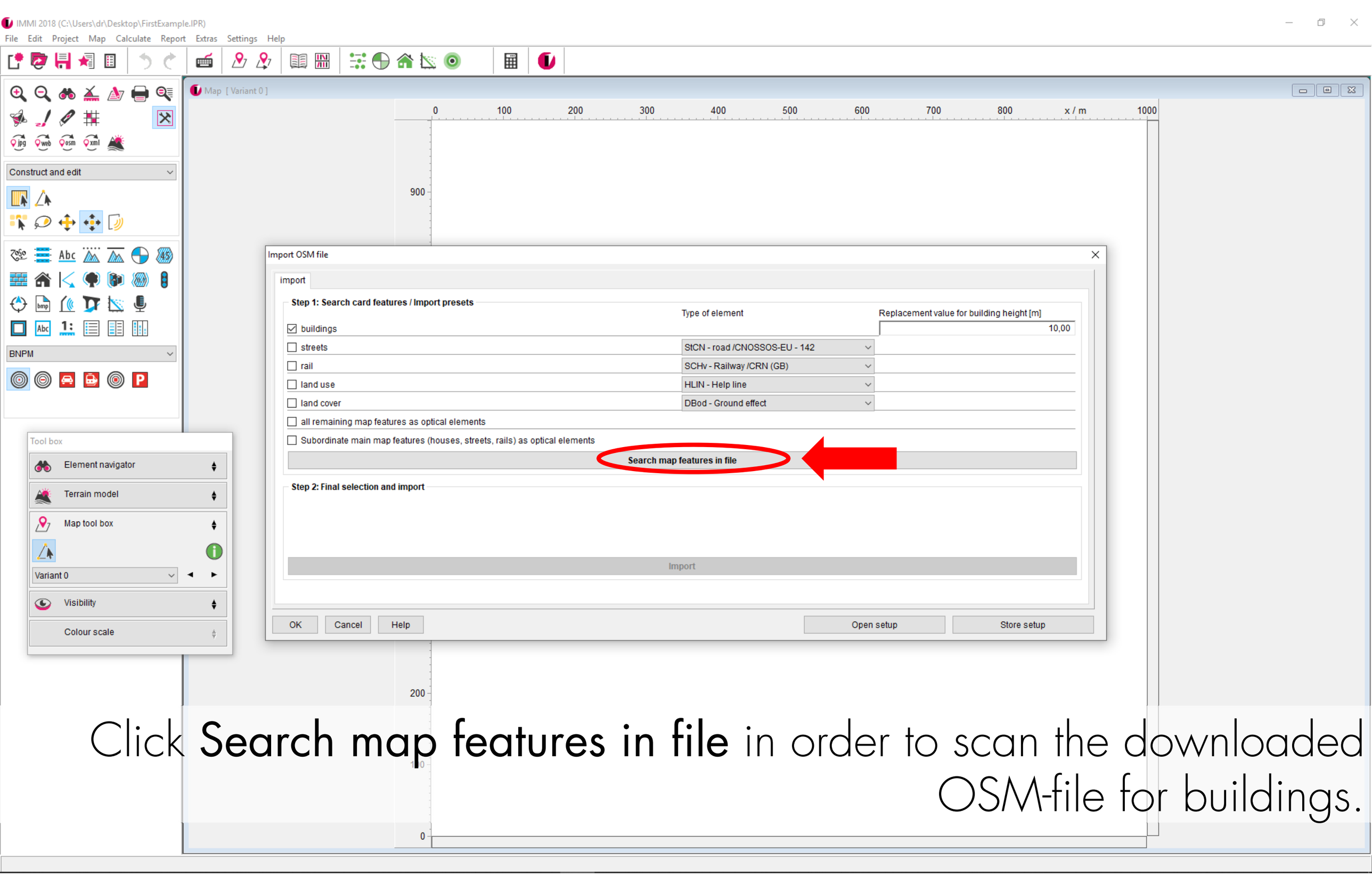
Visibility

Colour scale

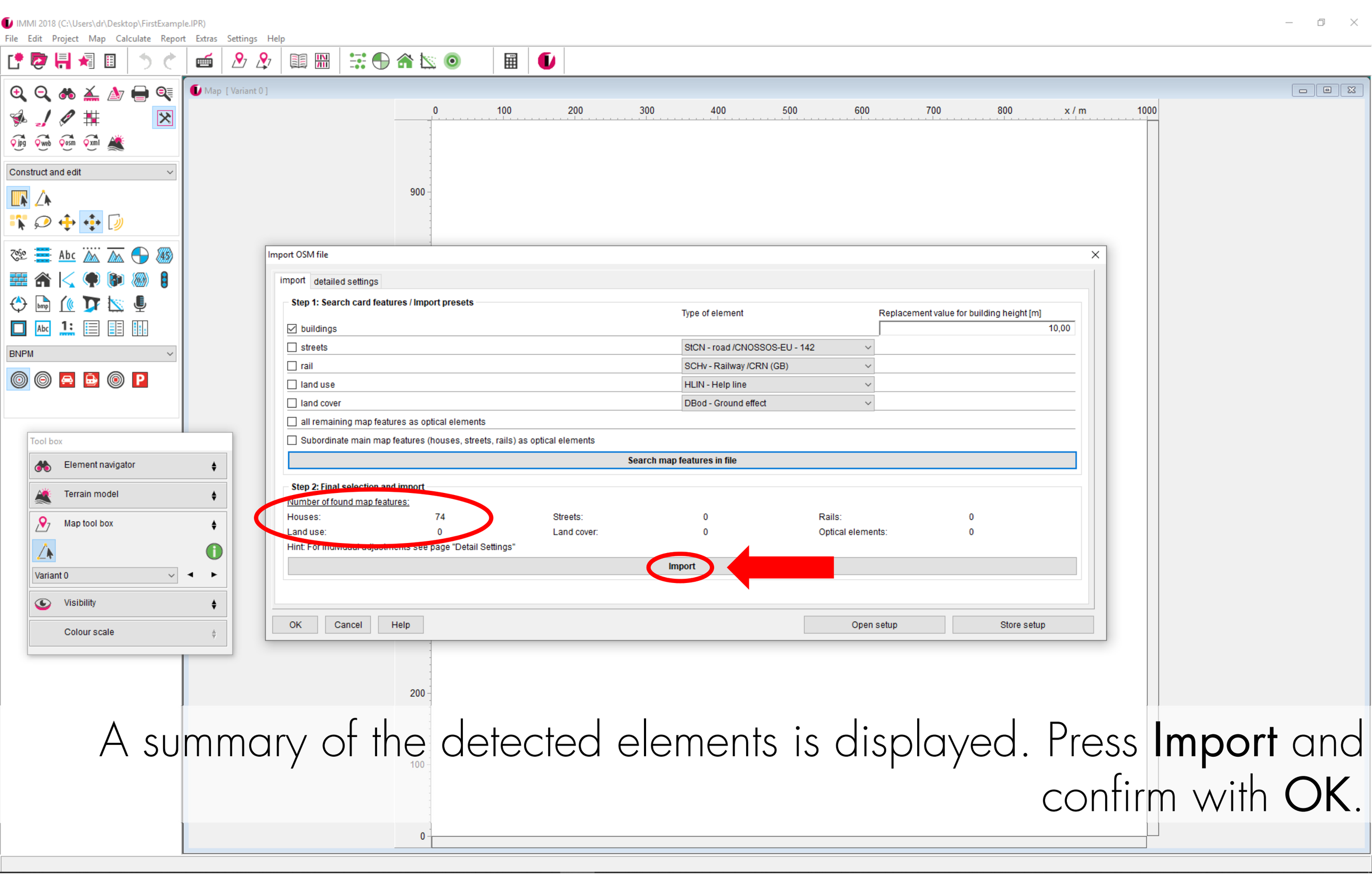
Construct and edit

BNPM

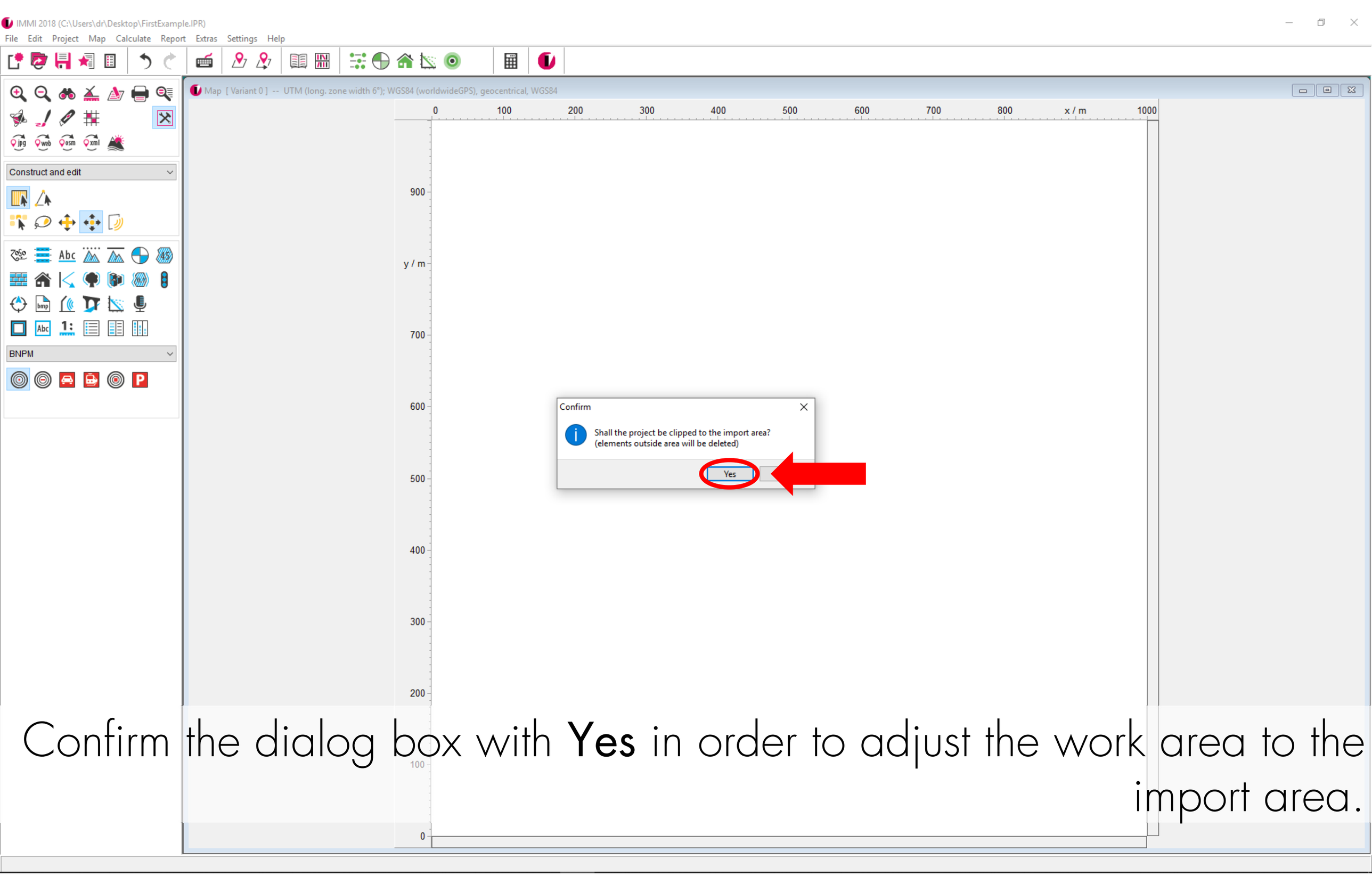
Activate the feature **buildings** and define a **replacement value for the building height** of 10 m.



Click **Search map features in file** in order to scan the downloaded OSM-file for buildings.



A summary of the detected elements is displayed. Press **Import** and confirm with **OK**.



Confirm the dialog box with **Yes** in order to adjust the work area to the import area.

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

562400 562500 562600 562700 562800 562900 x / m 563100

5513700 y / m 13500 13400 5513300

Construct and edit

BNPM

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Now the model set up is complete except for the noise sources. In this case we will model a first noise source.

IMMI 2018 (C:\Users\dr\Desktop\Erstes-Beispiel.IPR)

Datei Bearbeiten Projekt Lageplan Berechnung Bericht Extras Einstellungen Hilfe

Lageplan [Variante 0] -- UTM (Streifenbreite 6°), nördliche Hemisphäre; WGS84 (Weltweit GPS), geozentrisch

562200 562300 562400 562500 562600 562700 562800 x / m 563000

5513700 y / m 5513600 5513300 5513200

Konstruieren und Bearbeiten

DIN 18005

Toolbox

Element-Navigator

Geländemodell

Toolbox Plan

Variante 0

Sichtbarkeit

Farbskala

Use the mouse to navigate to the desired area.

x: 562435.7 y: 5513451.0

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

562650 562700 562750 x / m 562850

5513520 y / m 5513480 5513460 5513400 5513380

Construct and edit

ISO 9613-2

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Wölfel Gruppe

P P

Choose **ISO 9613-2** from the list of element libraries.

x: 562689.3 y: 5513438.3

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

562650 562700 562750 x / m 562850

5513520 y / m 5513480 5513460 5513400 5513380

Construct and edit

ISO 9613-2

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

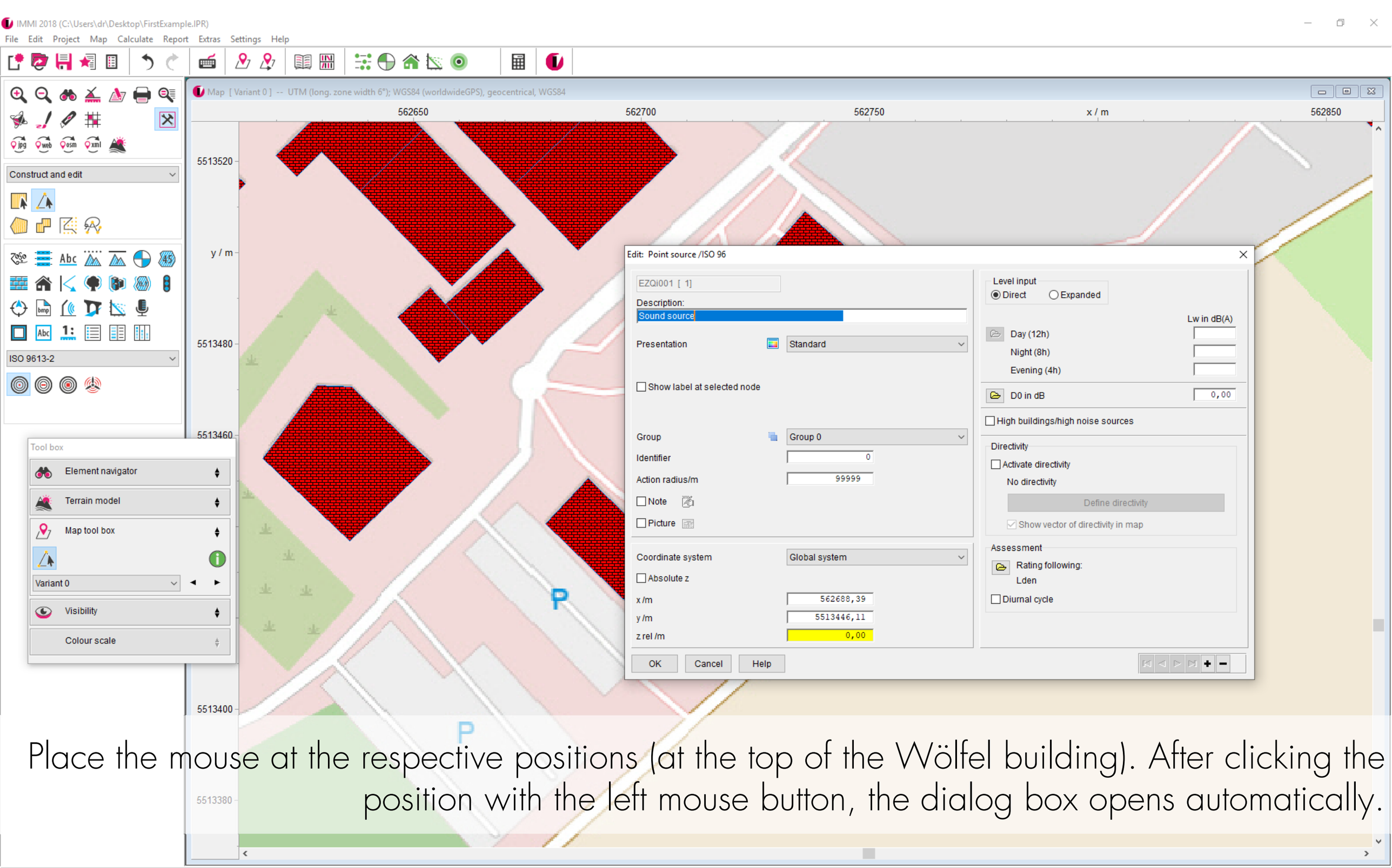
Colour scale

Wölfel Gruppe

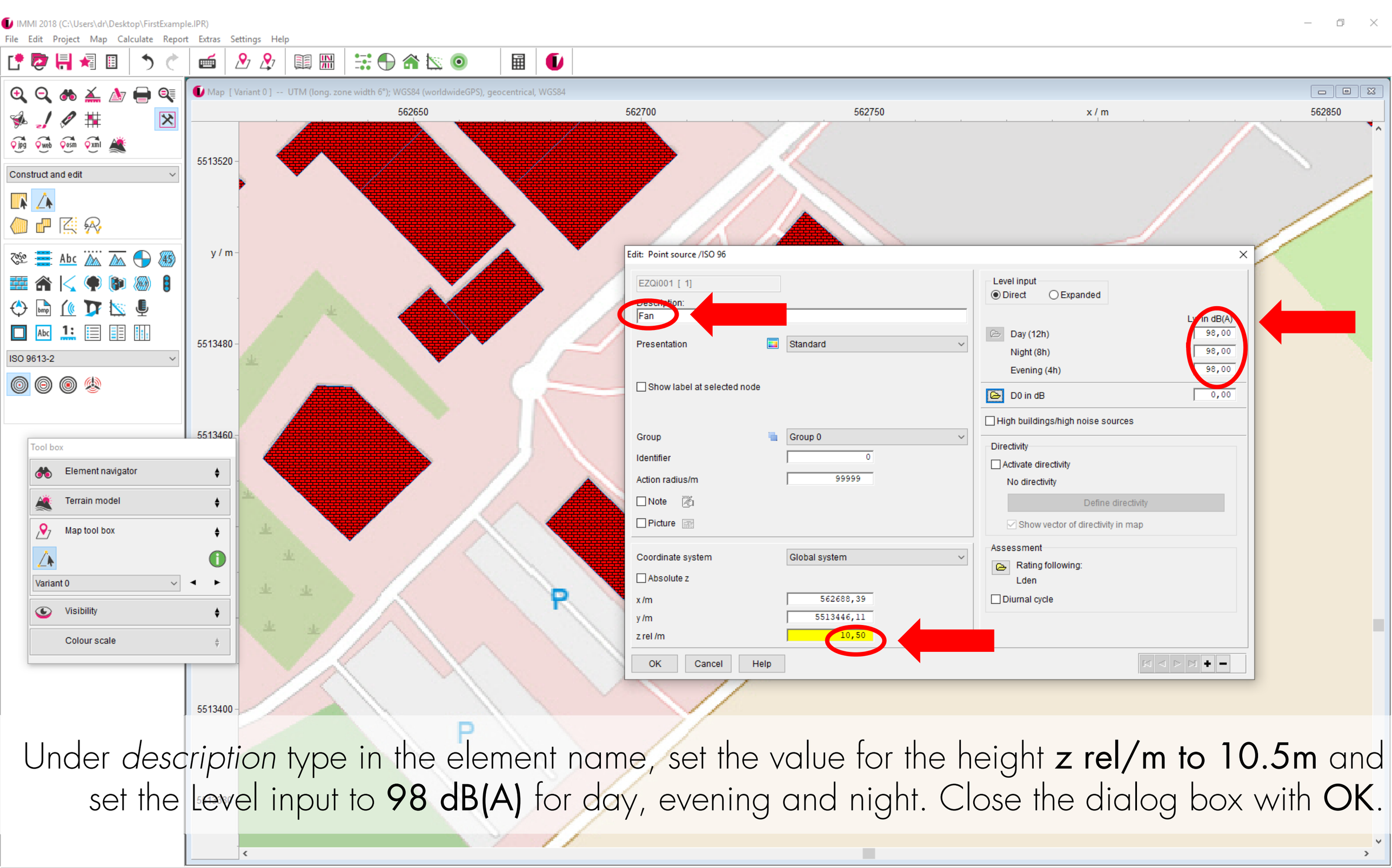
P

P

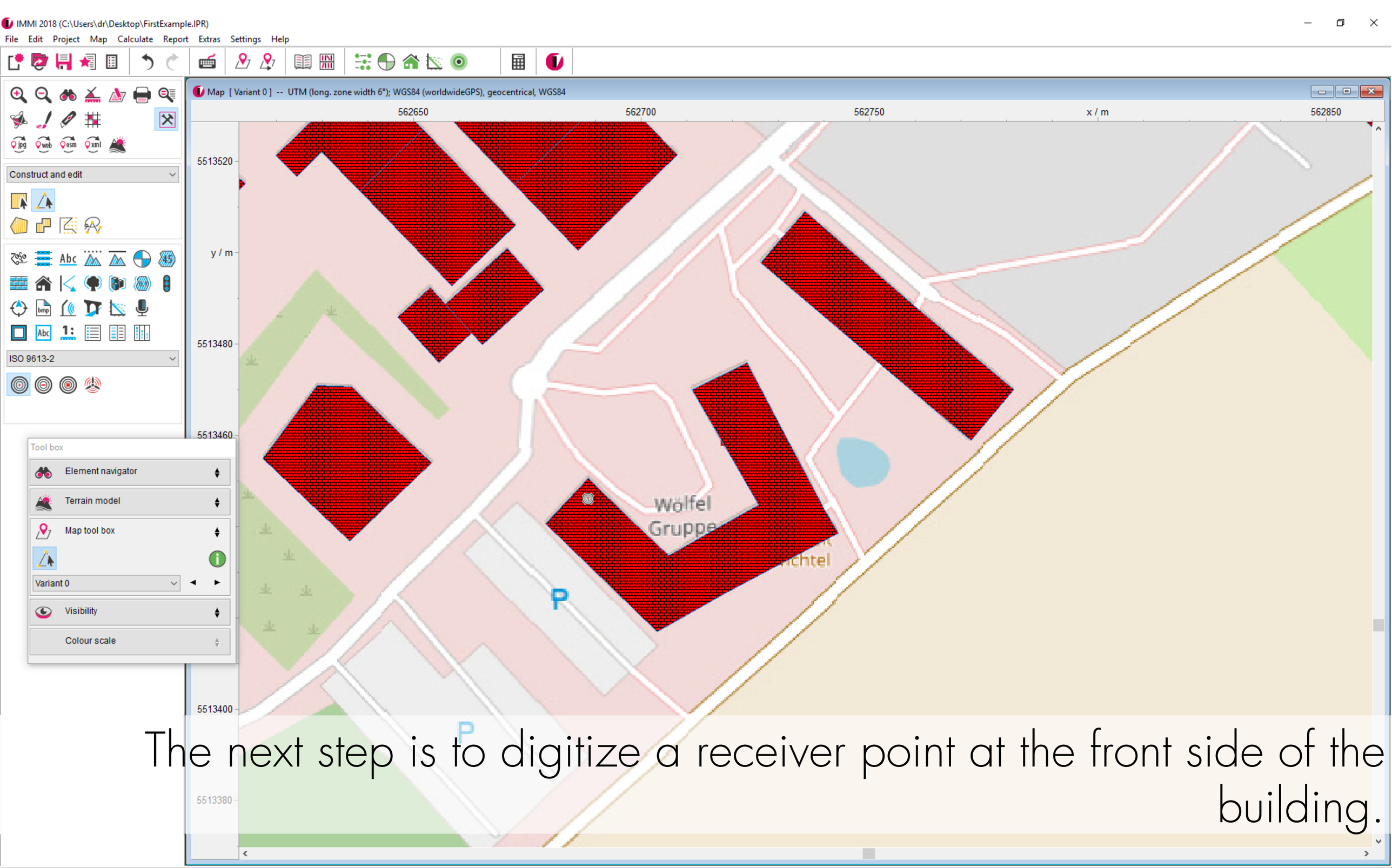
Choose the **draw element** tool and the **point source** according to ISO 9613-2.



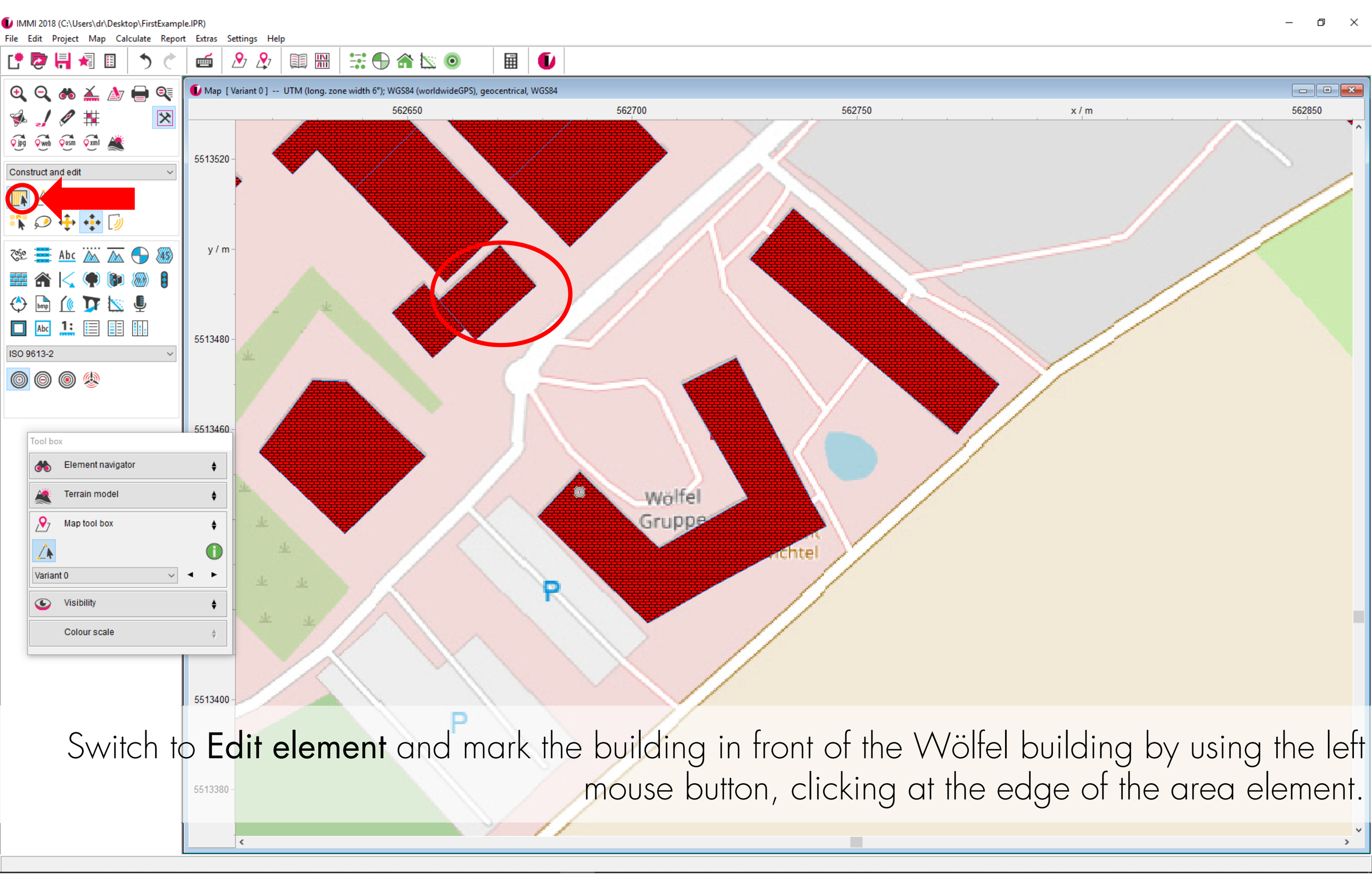
Place the mouse at the respective positions (at the top of the Wölfel building). After clicking the position with the left mouse button, the dialog box opens automatically.



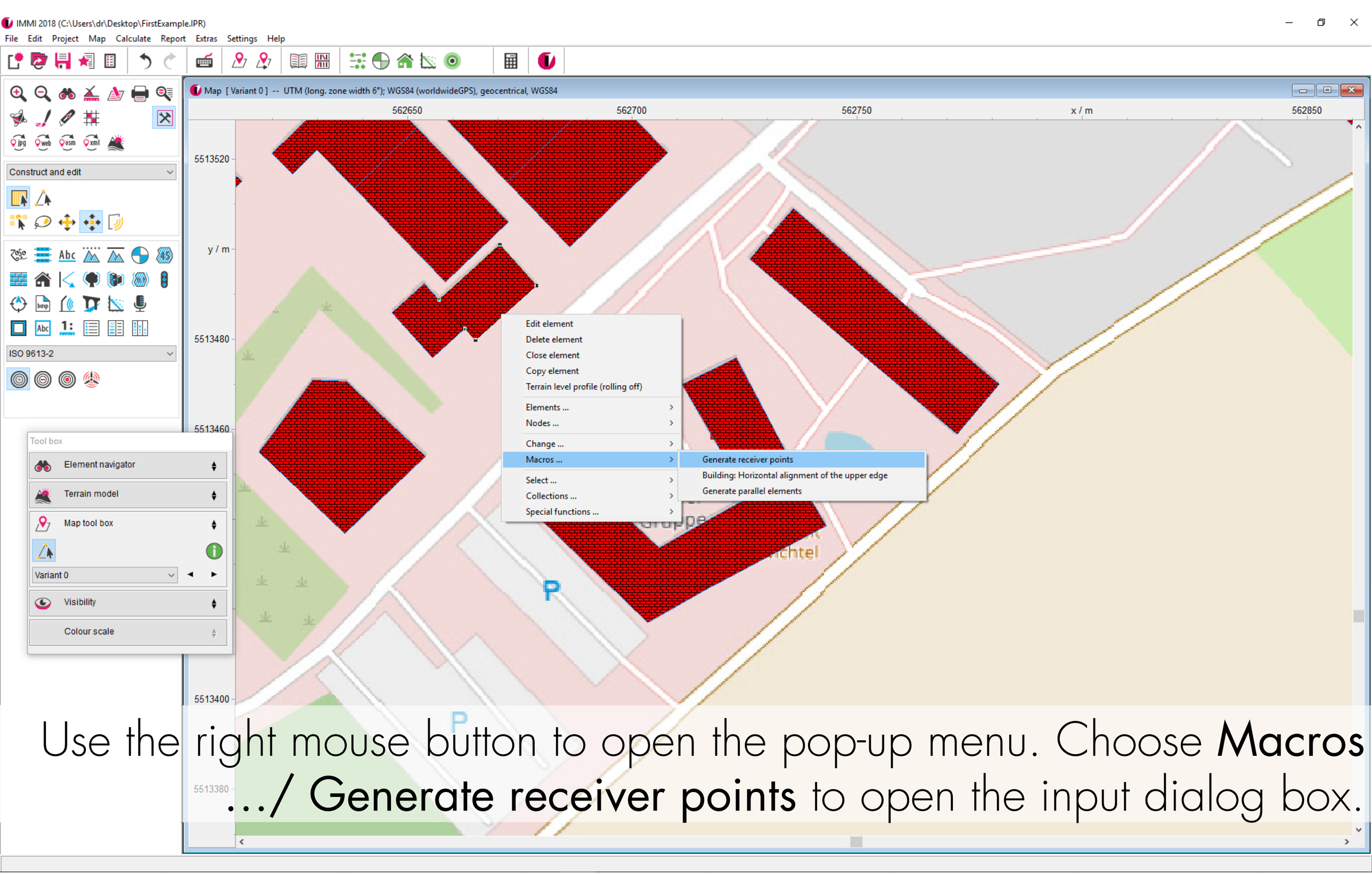
Under *description* type in the element name, set the value for the height **z rel/m to 10.5m** and set the Level input to **98 dB(A)** for day, evening and night. Close the dialog box with **OK**.



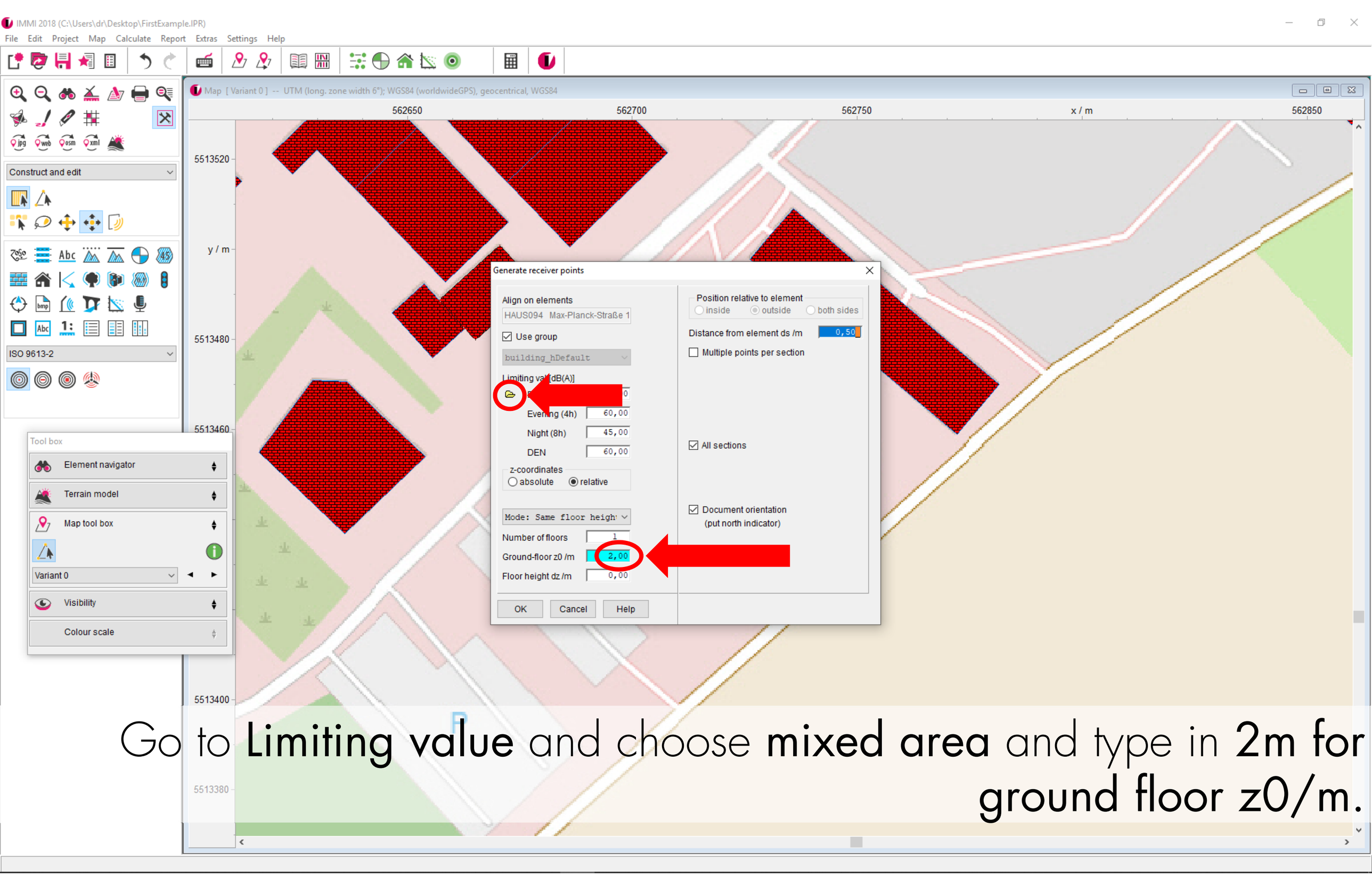
The next step is to digitize a receiver point at the front side of the building.



Switch to **Edit element** and mark the building in front of the Wölfel building by using the left mouse button, clicking at the edge of the area element.



Use the right mouse button to open the pop-up menu. Choose **Macros .../ Generate receiver points** to open the input dialog box.



Go to **Limiting value** and choose **mixed area** and type in **2m for ground floor z0/m.**

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

562650 562700 562750 x / m 562850

5513520 y / m 5513480 5513460 5513400 5513380

Construct and edit

ISO 9613-2

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Generate receiver points

Align on elements

HAUS094 Max-Planck-Straße 1

Use group

building_hDefault

Limiting val.[dB(A)]

Day (12h) 60,00

Evening (4h) 60,00

Night (8h) 45,00

DEN

z-coordinates

absolute relative

Mode: Same floor heigh

Number of floors 1

Ground-floor z0 /m 2,00

Floor height dz /m 0,00

OK Cancel Help

Position relative to element

inside outside both

Distance from element ds /m

Multiple points per section

All sections

First node 1

Last node 6

Document orientation (put north indicator)

Geometry input: HAUS001 [148] - Please select section

Absolute z No.

Global system

Direct entry

Enter z only

[ ]: 21.60m x21.09m

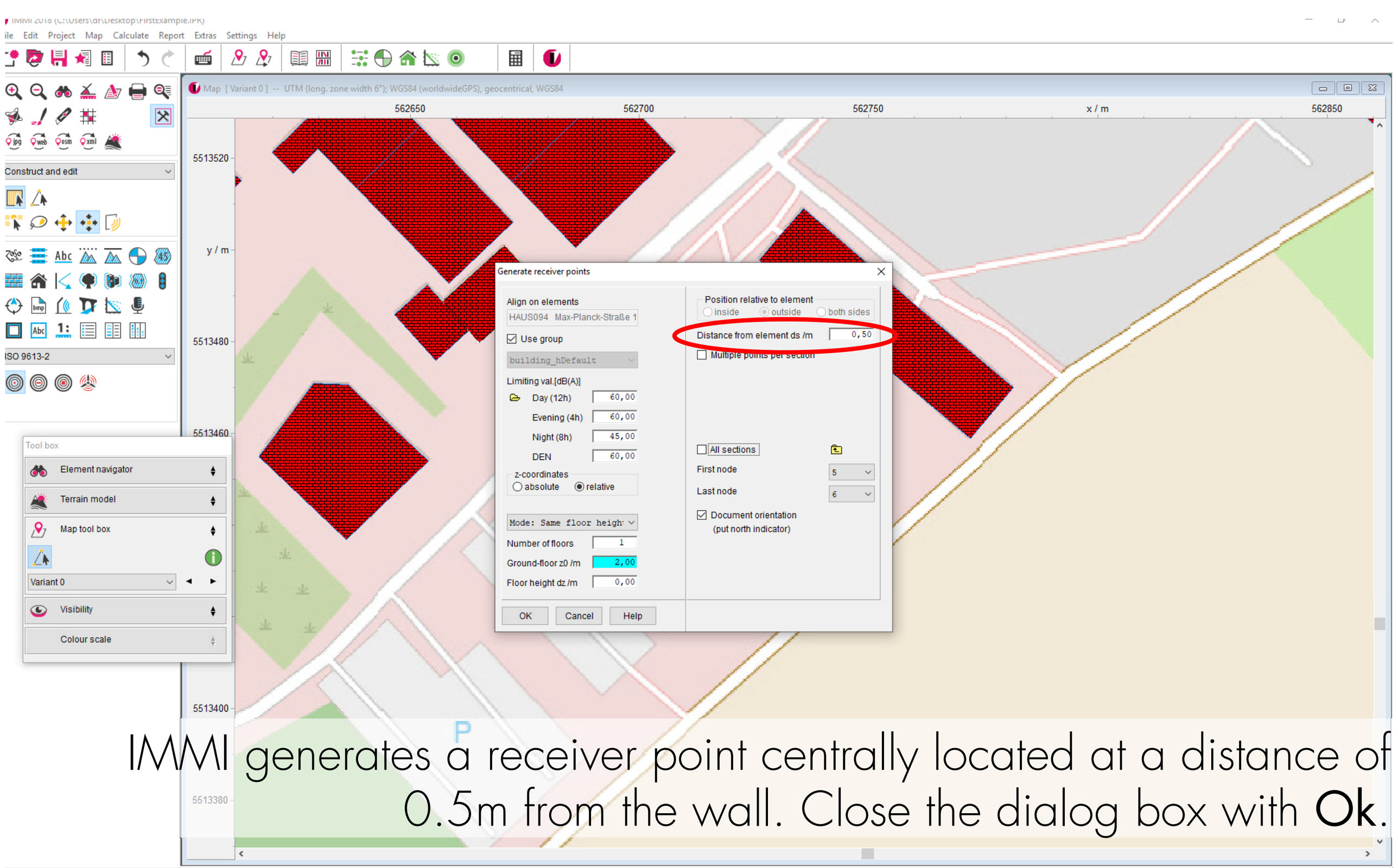
Node	x /m	y /m	z(rel)/m
1	562678,67	5513492,01	10,00
2	562670,58	5513500,97	10,00
3	562657,07	5513488,84	10,00
4	562662,86	5513482,42	10,00
5	562665,16		
6		5513492,01	10,00

Number of vertices	6
Length (3) /m	60.45
Length (2D) /m	60.45
Area /m²	219.14
Segment (2D) /m	18.16
Segment (3D) /m	18.16

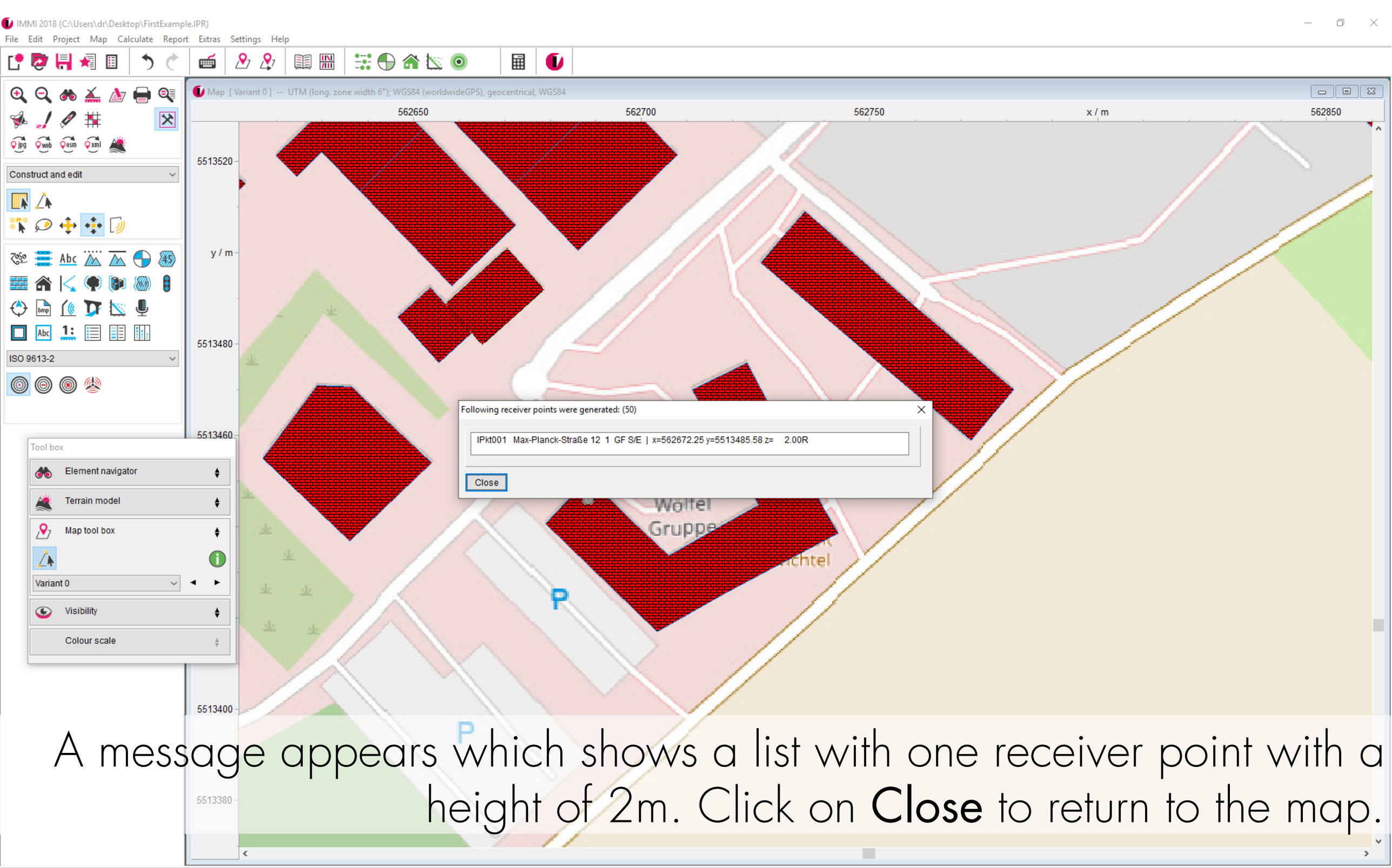
Add Delete

OK Cancel

Deactivate **All sections** to choose just the part of the building next to the noise source – in our example the section between node 5 and 6. Click on row 5 to choose this section and confirm with **OK**.



IMMI generates a receiver point centrally located at a distance of 0.5m from the wall. Close the dialog box with **Ok**.



A message appears which shows a list with one receiver point with a height of 2m. Click on **Close** to return to the map.

IMMI 2018 (C:\Users\dr\Desktop\Erstes-Beispiel.IPR)

Datei Bearbeiten Projekt Lageplan Berechnung Bericht Extras Einstellungen Hilfe

Lageplan [Variante 0] -- UTM (Streifenbreite 6°), nördliche Hemisphäre; WGS84 (Weltweit GPS), geozentrisch

562600 562650 x / m 562750

5513540 y / m 5513500 5513440 5513420

Konstruieren und Bearbeiten

DIN 18005

Toolbox

Element-Navigator

Geländemodell

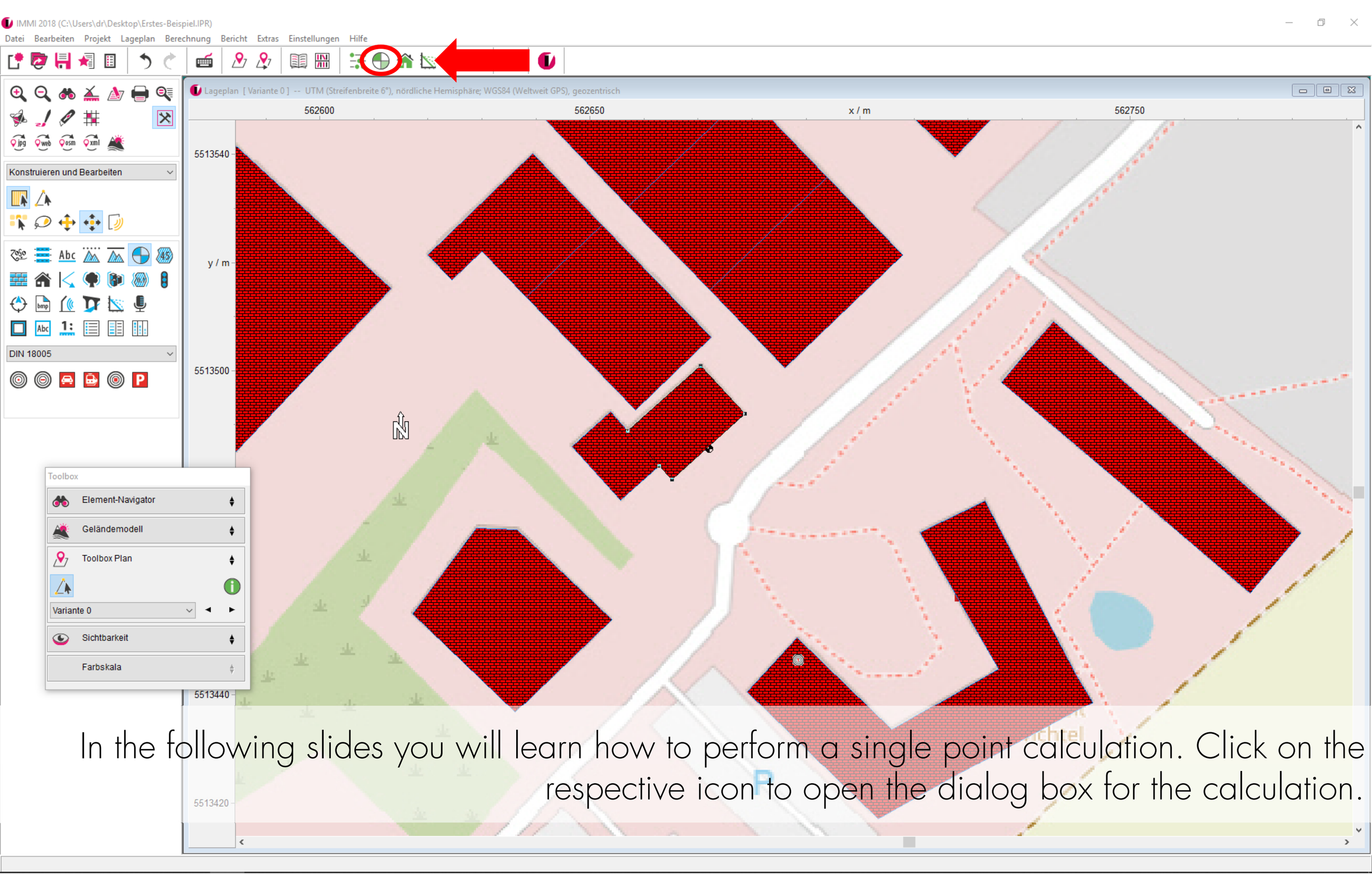
Toolbox Plan

Variante 0

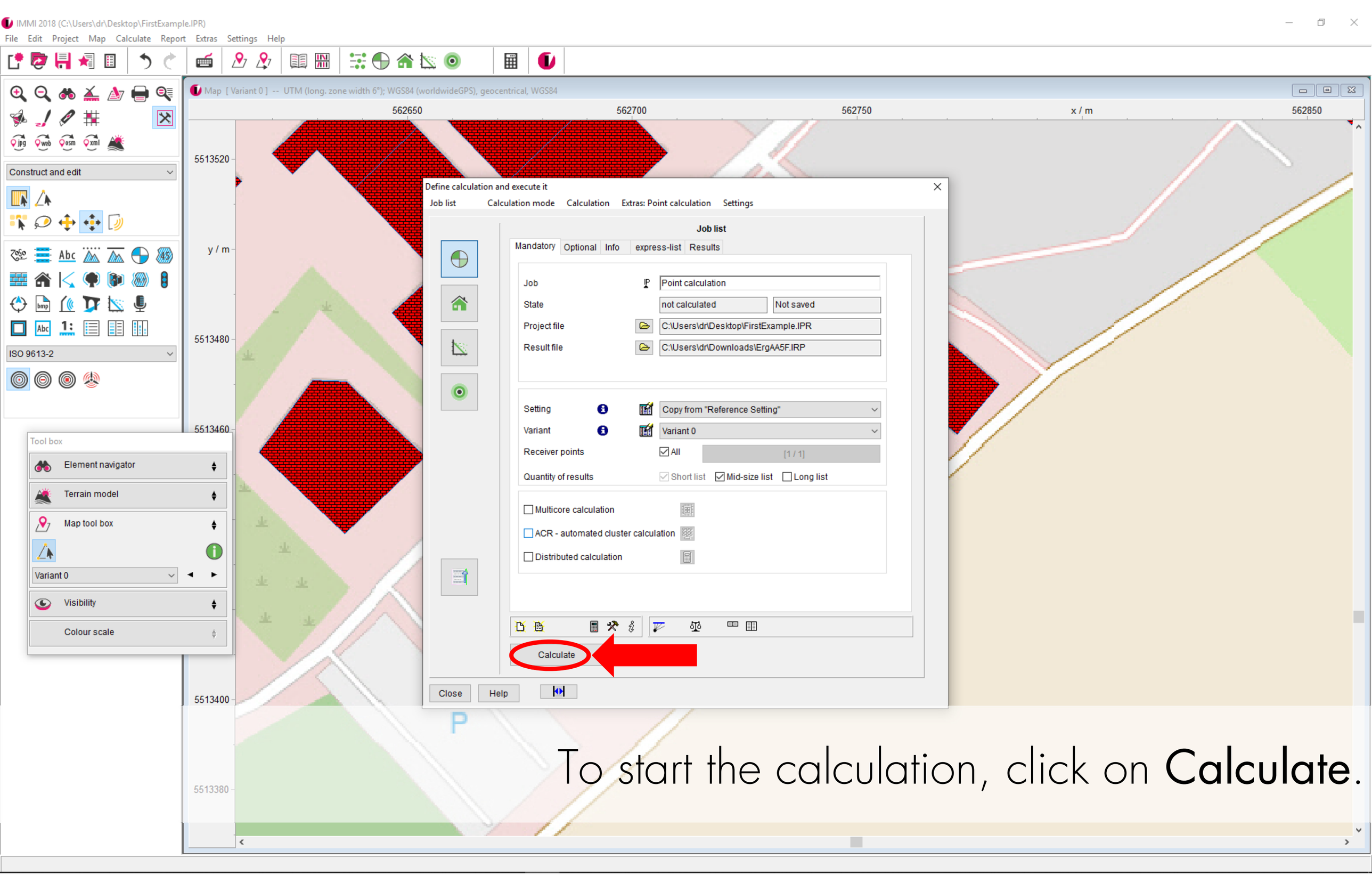
Sichtbarkeit

Farbskala

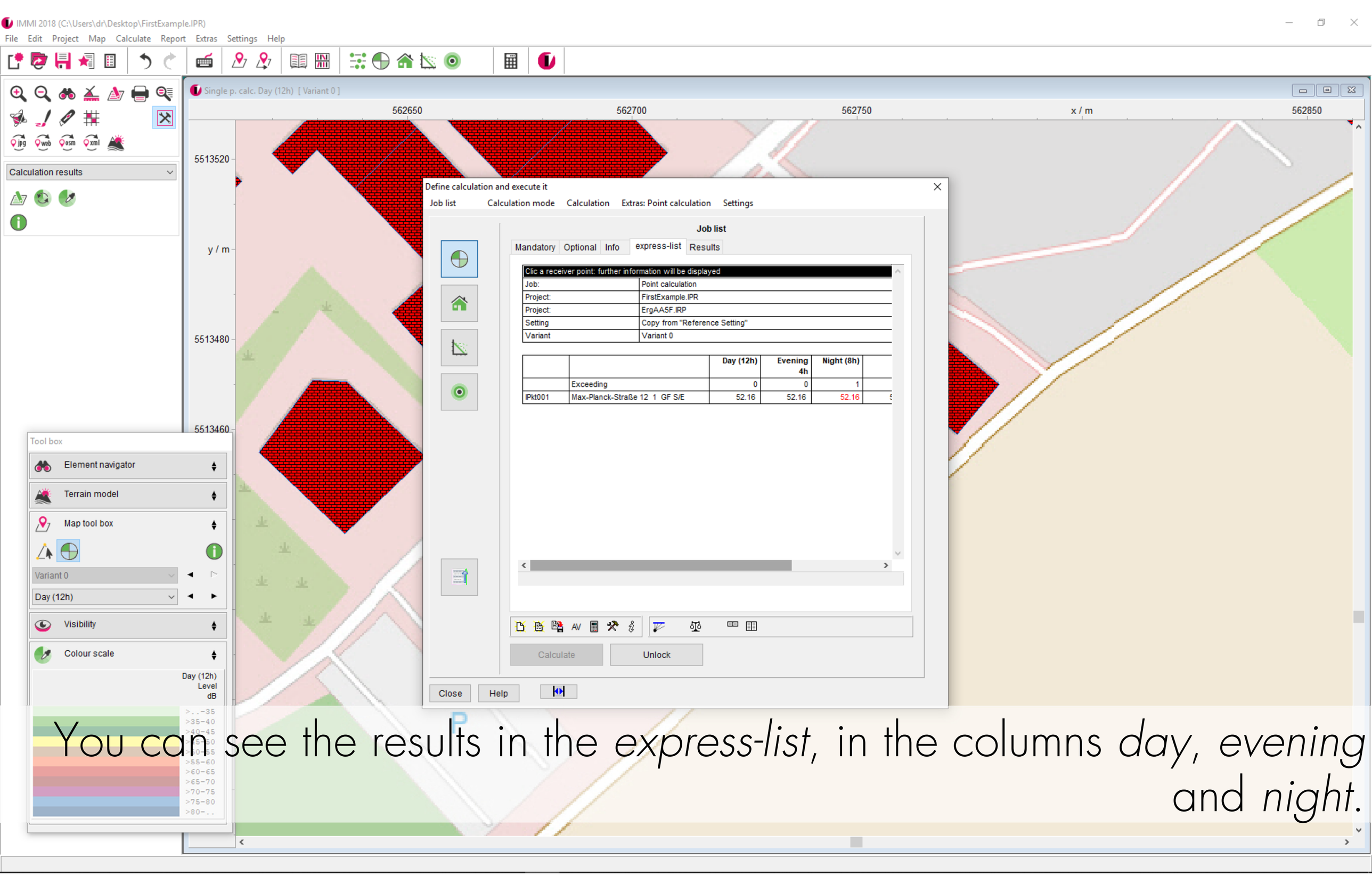
You can see the receiver point on the map.



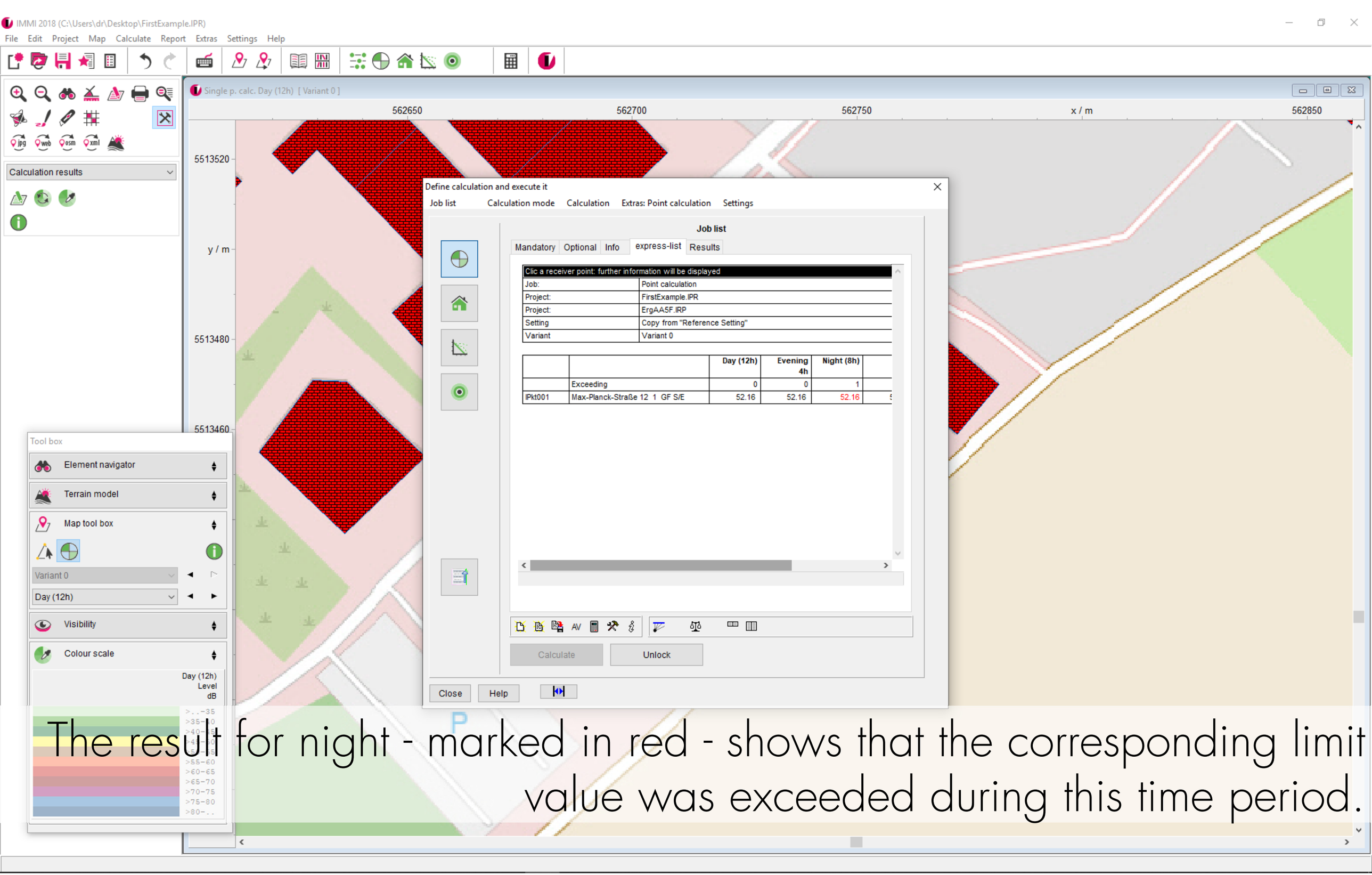
In the following slides you will learn how to perform a single point calculation. Click on the respective icon to open the dialog box for the calculation.



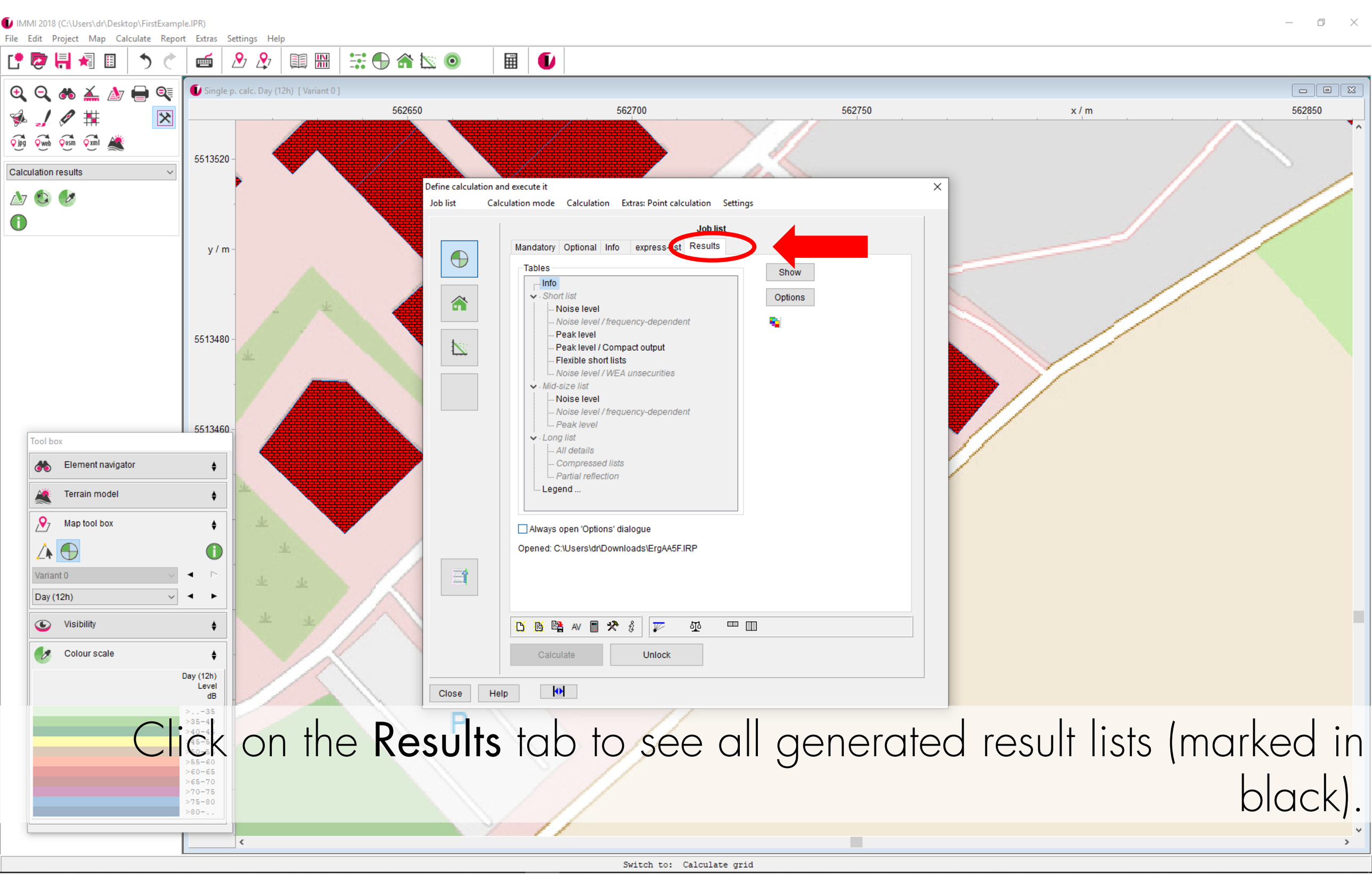
To start the calculation, click on **Calculate**.



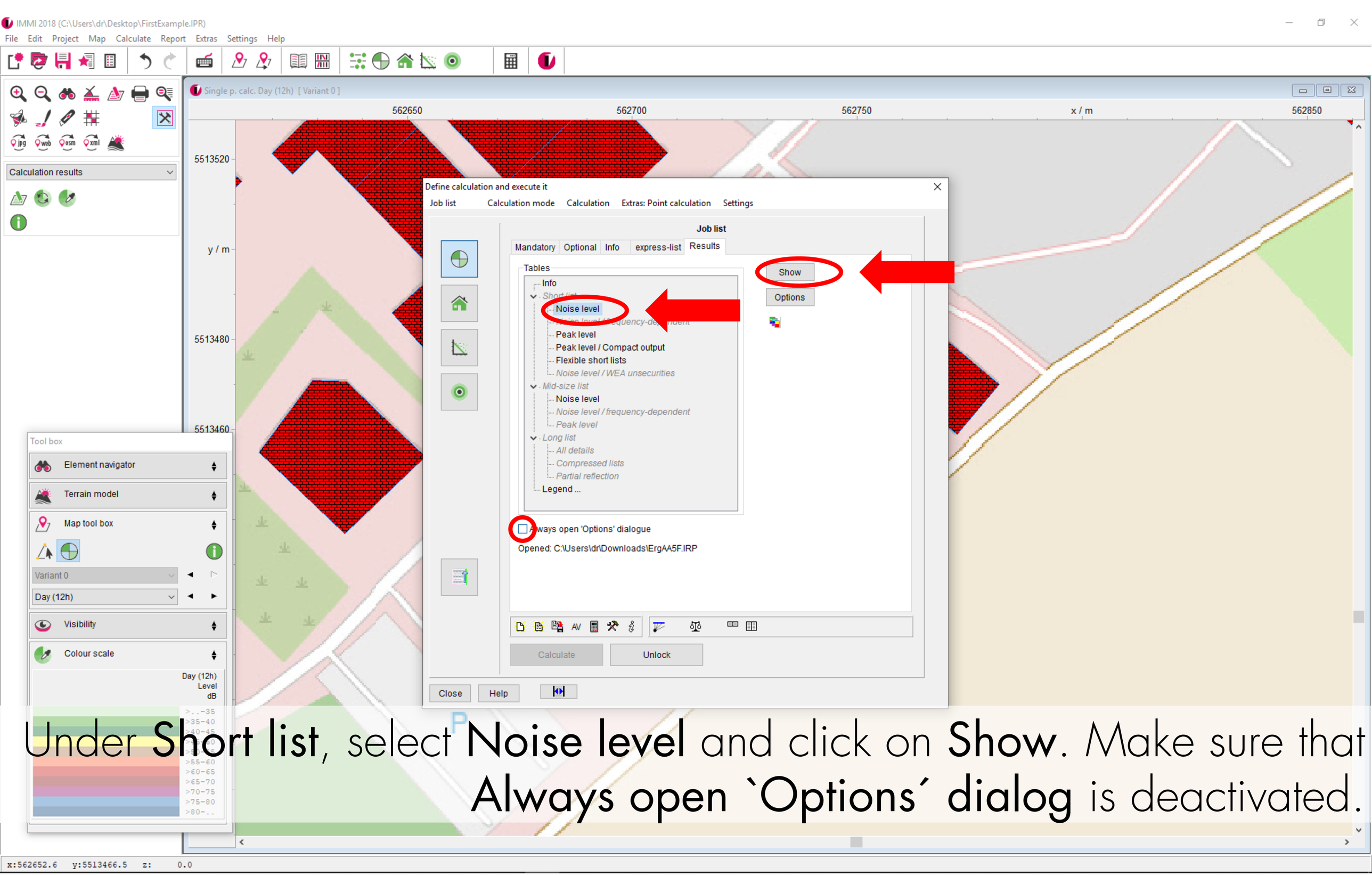
You can see the results in the *express-list*, in the columns *day*, *evening* and *night*.



The result for night - marked in red - shows that the corresponding limit value was exceeded during this time period.



Click on the **Results** tab to see all generated result lists (marked in black).



Under **Short list**, select **Noise level** and click on **Show**. Make sure that **Always open `Options´ dialog** is deactivated.

Short list [9 Rows]

List Edit View

Short list		Point calculation							
Noise prediction		Rating following: Lden							
Variant 0		Setting: Copy from "Reference Setting"							
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		LV	L r,A	LV	L r,A	LV	L r,A	LV	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
IPkt001	Max-Planck-Straße 12 1 GF S	60,0	52,2	60,0	52,2	45,0	52,2	60,0	58,6

Press F1 to obtain information relative to further features

Now you can see the results. For all time periods you can see the calculated noise level and the corresponding limit value.

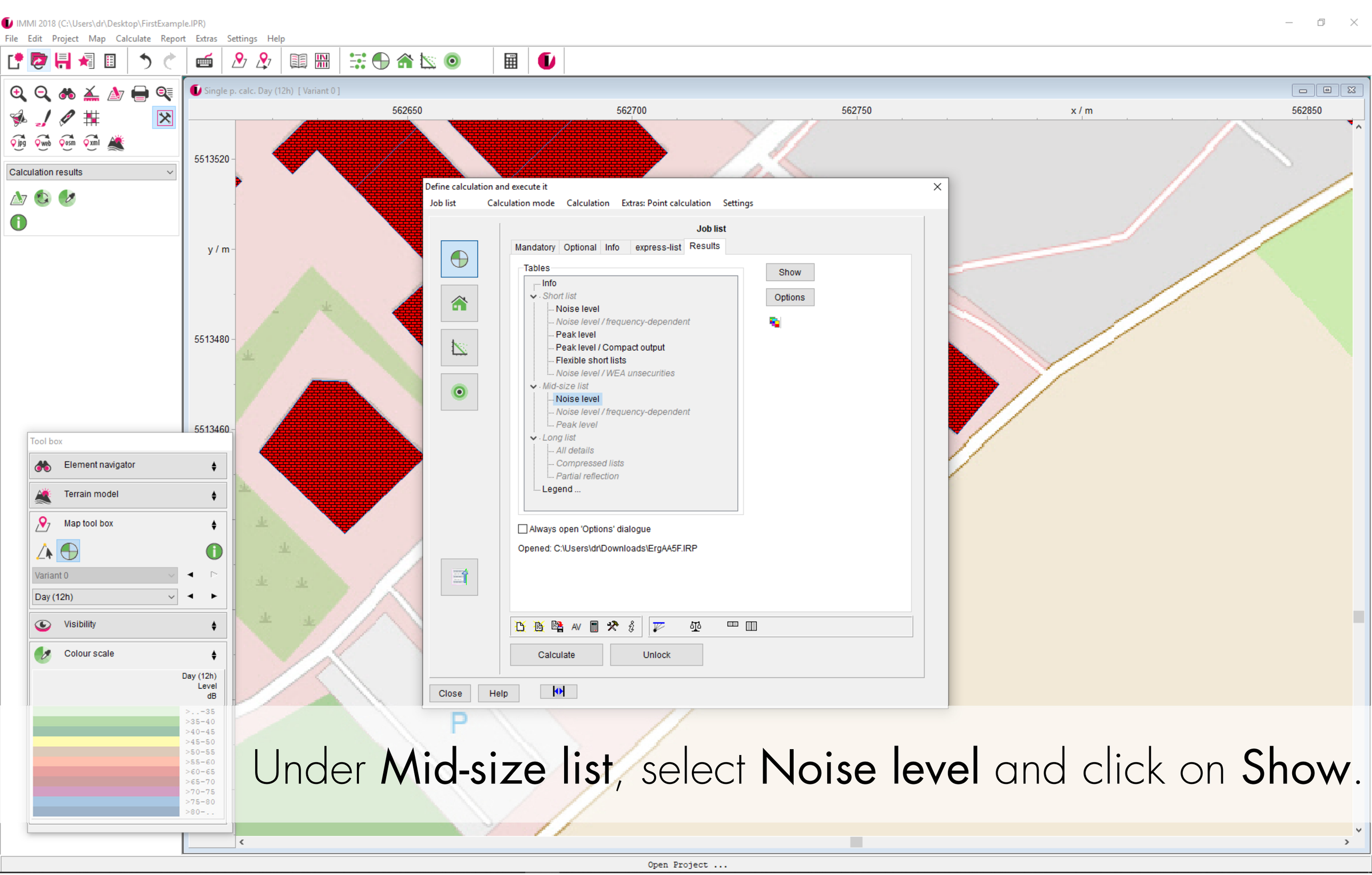
Short list [9 Rows]

List Edit View

Short list		Point calculation							
Noise prediction		Rating following: Lden							
Variant 0		Setting: Copy from "Reference Setting"							
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		LV	L r,A	LV	L r,A	LV	L r,A	LV	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
IPkt001	Max-Planck-Straße 12 1 GF S	60,0	52,2	60,0	52,2	45,0	52,2	60,0	58,6

Press F1 to obtain information relative to further features

Close the list by using the **Close** icon.



Under **Mid-size list**, select **Noise level** and click on **Show**.

Mid-size list [10 Rows]

List Edit View

Mid-size list »		Point calculation							
Noise prediction		Rating following: Lden							
IPkt001 »	Max-Planck-Straße 12 1	Variant 0 Setting: Copy from "Reference Setting"							
		x = 562672,25 m		y = 5513485,58 m		z = 2,00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
EZQi001 »	Fan	52,157	52,157	52,157	52,157	52,157	52,157	58,552	58,552
	Sum		**52,157**		**52,157**		**52,157**		**58,552**

Here you can additionaly see the impact of the source. Close the list by using the **Close** icon.

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Variant 0]

562650 562700 562750 x / m 562850

5513520 y / m 5513480 5513460

Wölfel Gruppe

Calculation results

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB

>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80
>80-..

The calculated receiver point is shown on the map with the corresponding colour scale.

IMMI 2018 (C:\Users\dr\Desktop\FirstExample.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Variant 0]

IMMI 3D

Calculation results

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB

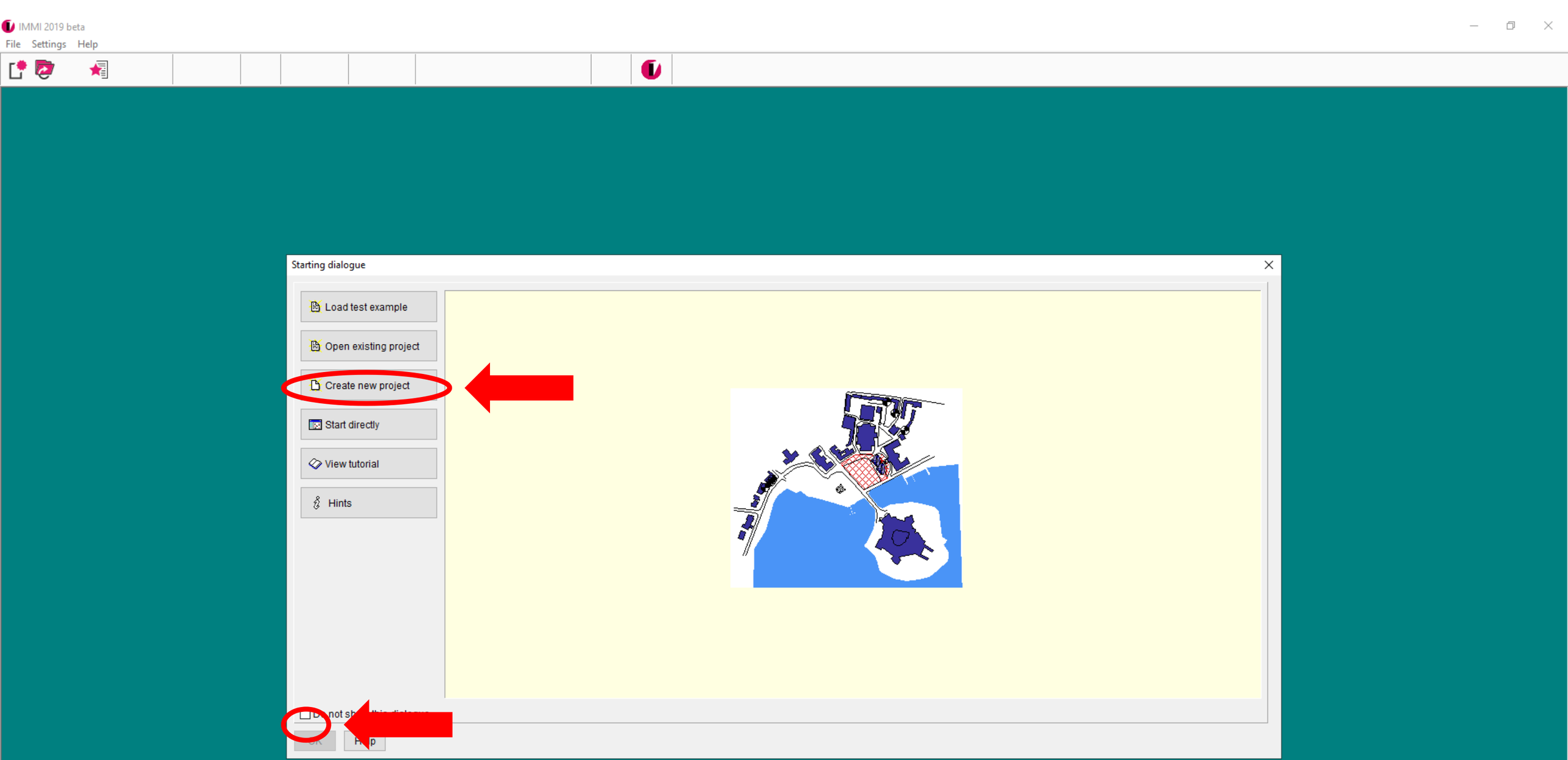
>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70

Congratulations!

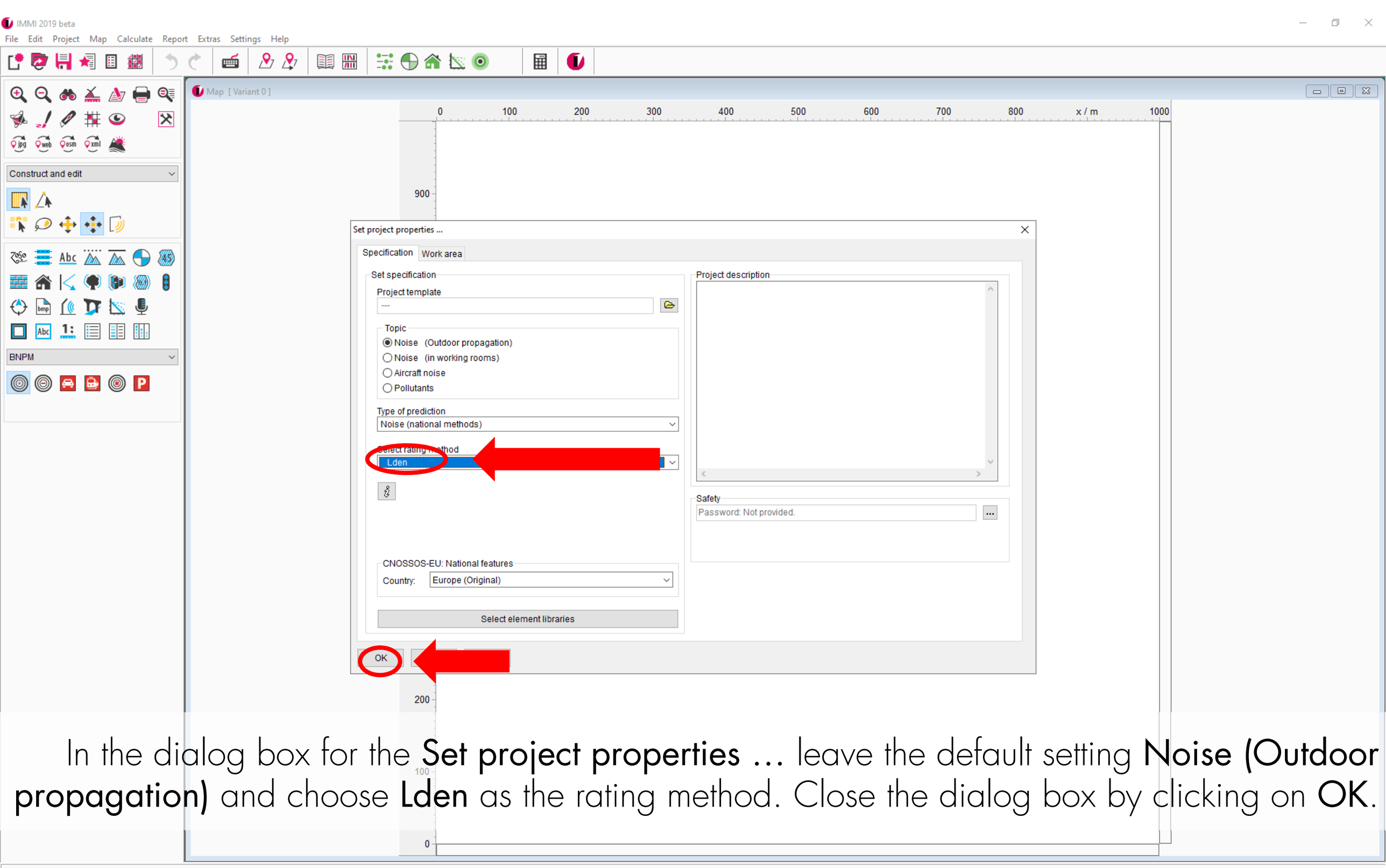
You have now successfully completed your first self-created project.

IMMI

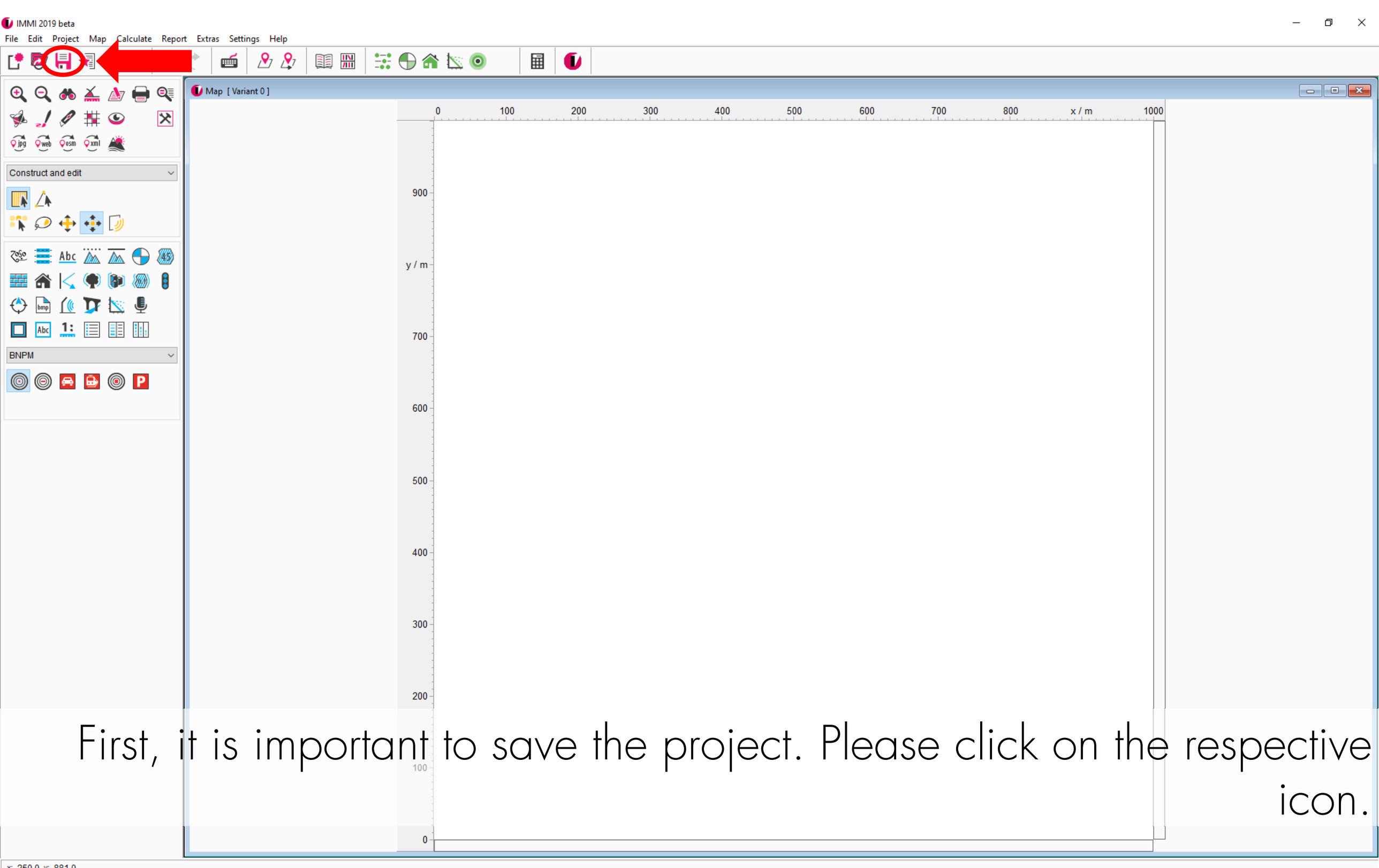
The next example deals with road traffic noise und should improve your skills and experience working with IMMI.



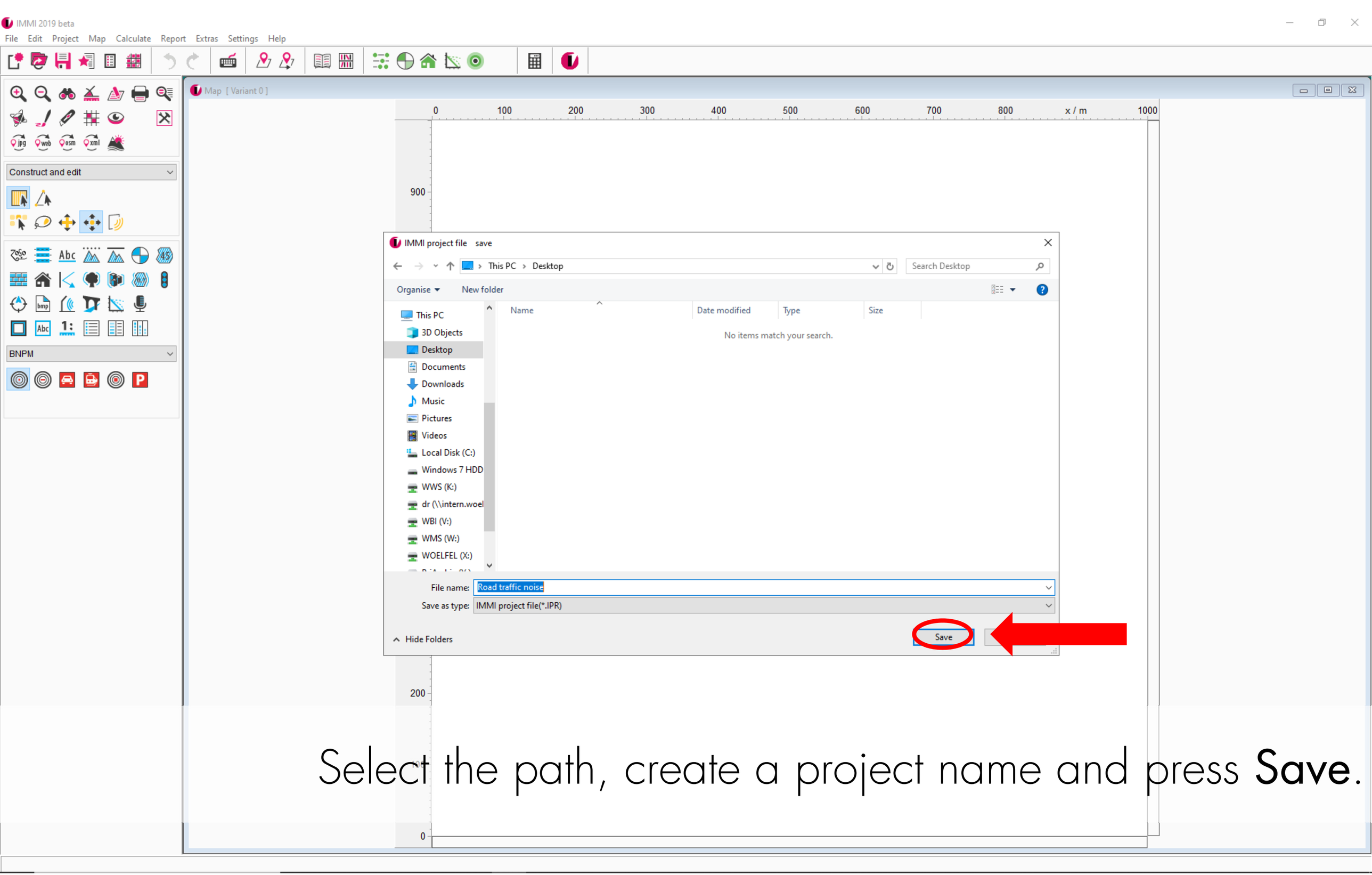
Start IMMI, choose **Create new project** and confirm with **OK**.



In the dialog box for the **Set project properties ...** leave the default setting **Noise (Outdoor propagation)** and choose **Lden** as the rating method. Close the dialog box by clicking on **OK**.



First, it is important to save the project. Please click on the respective icon.



Select the path, create a project name and press **Save**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0]

Construct and edit

BNPM

Tool box

Element navigator

Terrain model

Map tool box

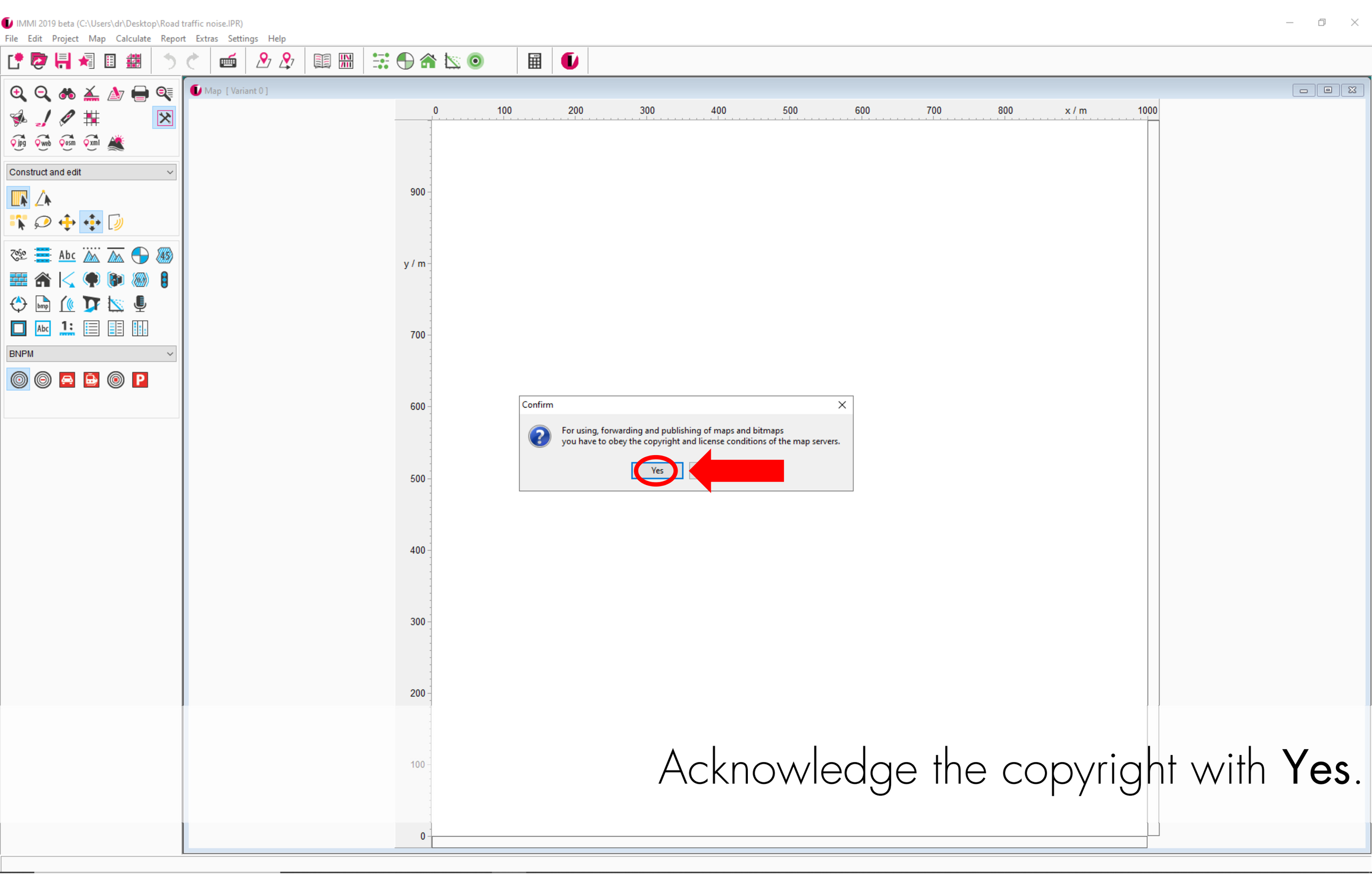
Variant 0

Visibility

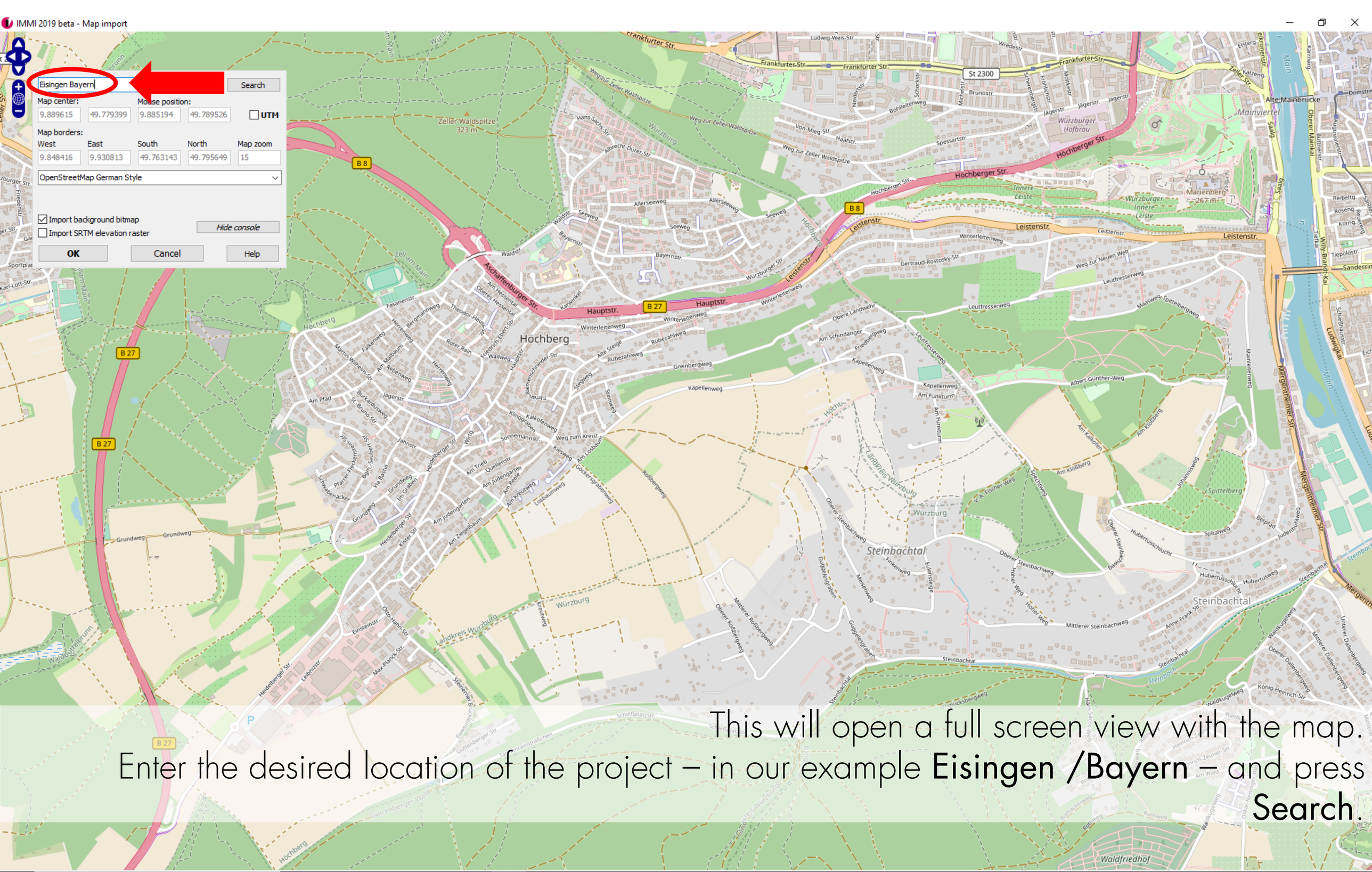
Colour scale

We will use the web import to create the background image and the houses in our area of interest. Please click the icon for the web import.

x: 212.0 y: 880.0



Acknowledge the copyright with **Yes**.



This will open a full screen view with the map.
Enter the desired location of the project – in our example **Eisingen /Bayern** – and press **Search**.

IMMI 2019 beta - Map import

Eisingen Bayern | Search

Map center: 9.838699 | 49.760148 — Mouse position: 9.837680 | 49.762695 — UTM

Map borders:

West	East	South	North	Map zoom
9.828400	9.848999	49.756083	49.764213	17

OpenTopoMap

Import background bitmap

Import SRTM elevation raster

Vector maps

Select area

West	East	South	North
9.828400	9.848999	49.756083	49.764213

OK | Help

Zoom in to Haupstraße / Oberer Stadtweg. Use the **OpenTopoMap**.
Activate **Import background bitmap** and confirm with **OK**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

559800 560000 560200 560400 560600 x / m 561000

5512700 y / m 5512500 5512400 5512300 5511900

Construct and edit

BNPM

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

The map has been imported and now you can start working with a georeferenced project.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Choose **CNOSSOS-EU** from the list of element libraries.

x: 560197.9 y: 5512351.7

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Choose the **Draw element** tool and the **road traffic noise source** according CNOSSOS-EU.

x: 560197.9 y: 5512351.7

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

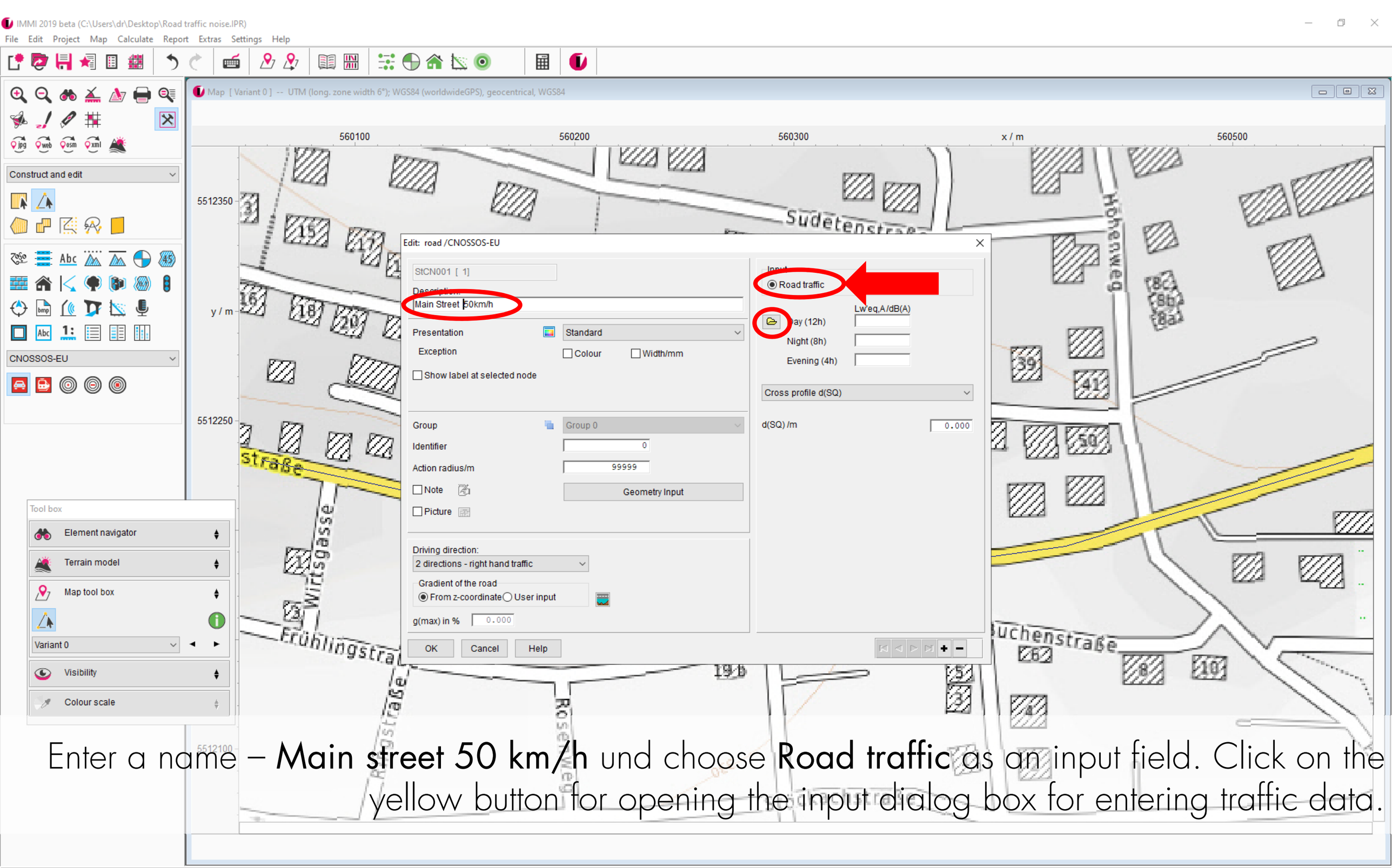
Variant 0

Visibility

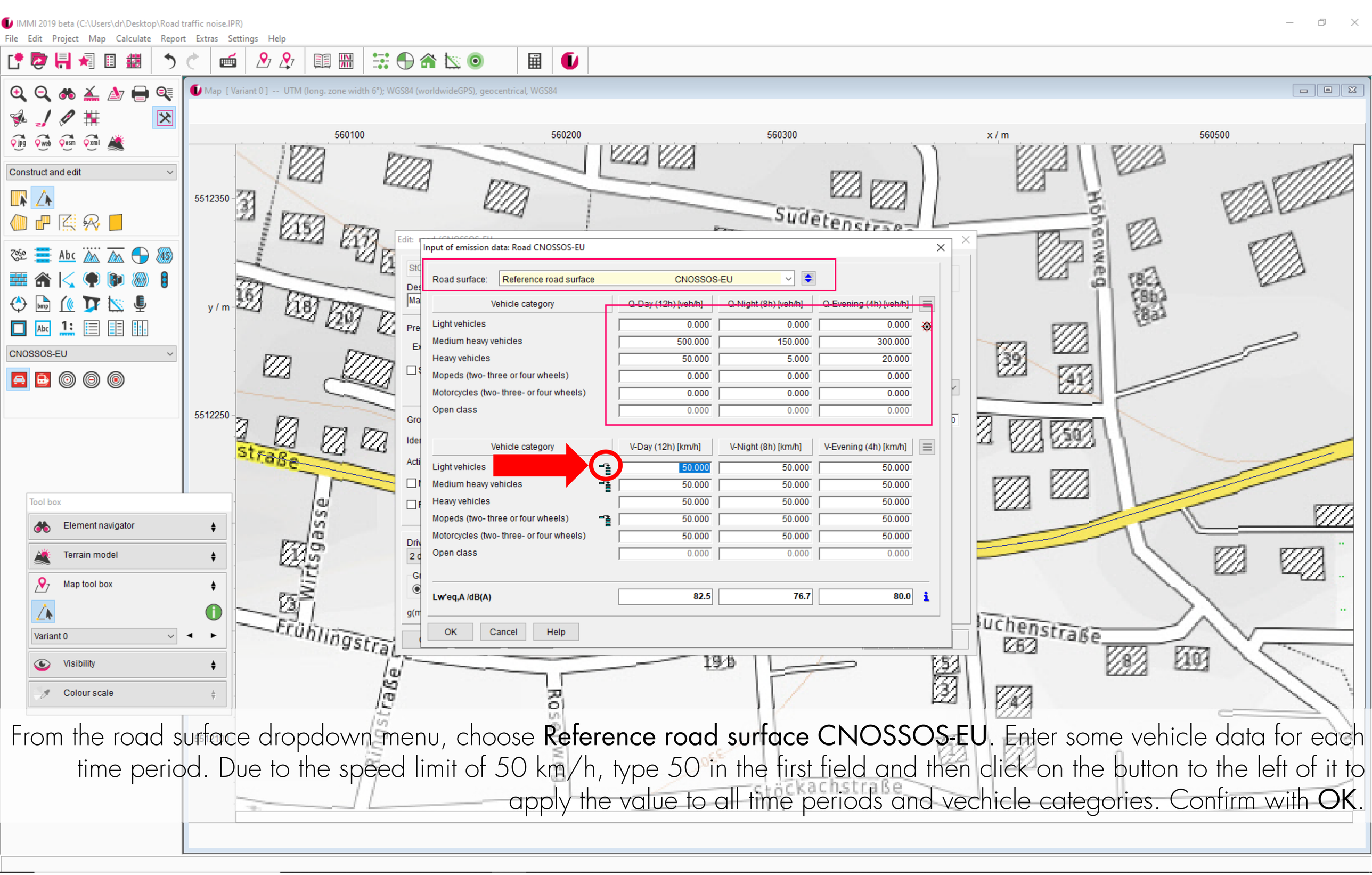
Colour scale

Digitize the road along the Hauptstraße (yellow line). With a right-click you can complete your design and the input dialog box opens automatically.

x: 560197.9 y: 5512351.7



Enter a name – **Main street 50 km/h** und choose **Road traffic** as an input field. Click on the yellow button for opening the input dialog box for entering traffic data.



From the road surface dropdown menu, choose **Reference road surface CNOSSOS-EU**. Enter some vehicle data for each time period. Due to the speed limit of 50 km/h, type 50 in the first field and then click on the button to the left of it to apply the value to all time periods and vechicle categories. Confirm with **OK**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

560100 560200 560300 x / m 560500

5512350 y / m 5512250 5512100

Edit: road /CNOSSOS-EU

StCN001 [1]

Description: Main Street 50km/h

Presentation Standard

Exception Colour Width/mm

Show label at selected node

Group Group 0

Identifier 0

Action radius/m 99999

Note Geometry Input

Picture

Driving direction: 2 directions - right hand traffic

Gradient of the road

From z-coordinate User input

g(max) in % 0.000

OK Cancel Help

Input

Road traffic Spectra

Lw'eq,A/dB(A)

Day (12h) 82.39

Night (8h) 76.67

Evening (4h) 79.93

Cross profile d(SQ)

d(SQ) /m 2.000

Tool box

Element navigator

Terrain model

Map tool box

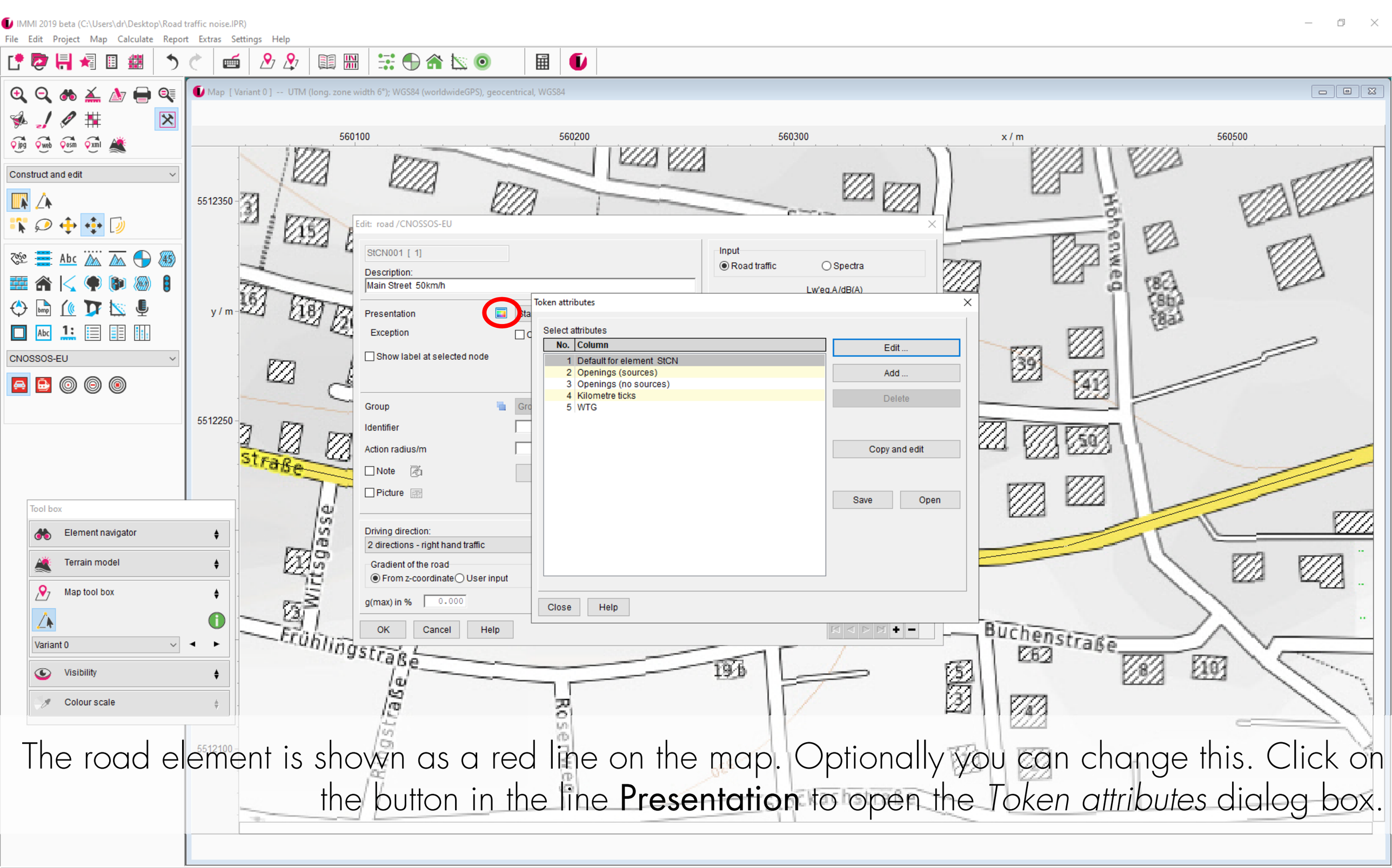
Variant 0

Visibility

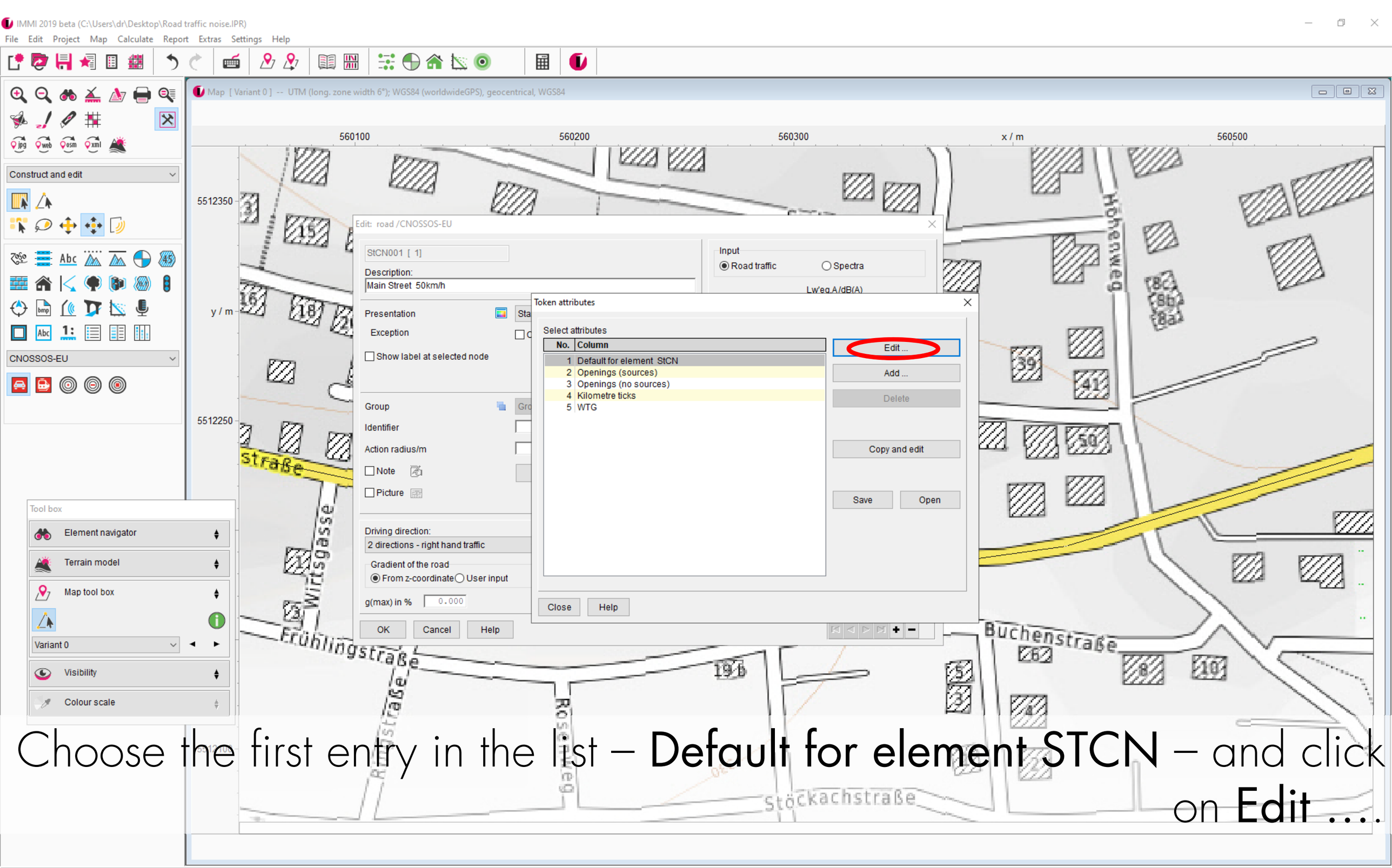
Colour scale

CNOSSOS-EU

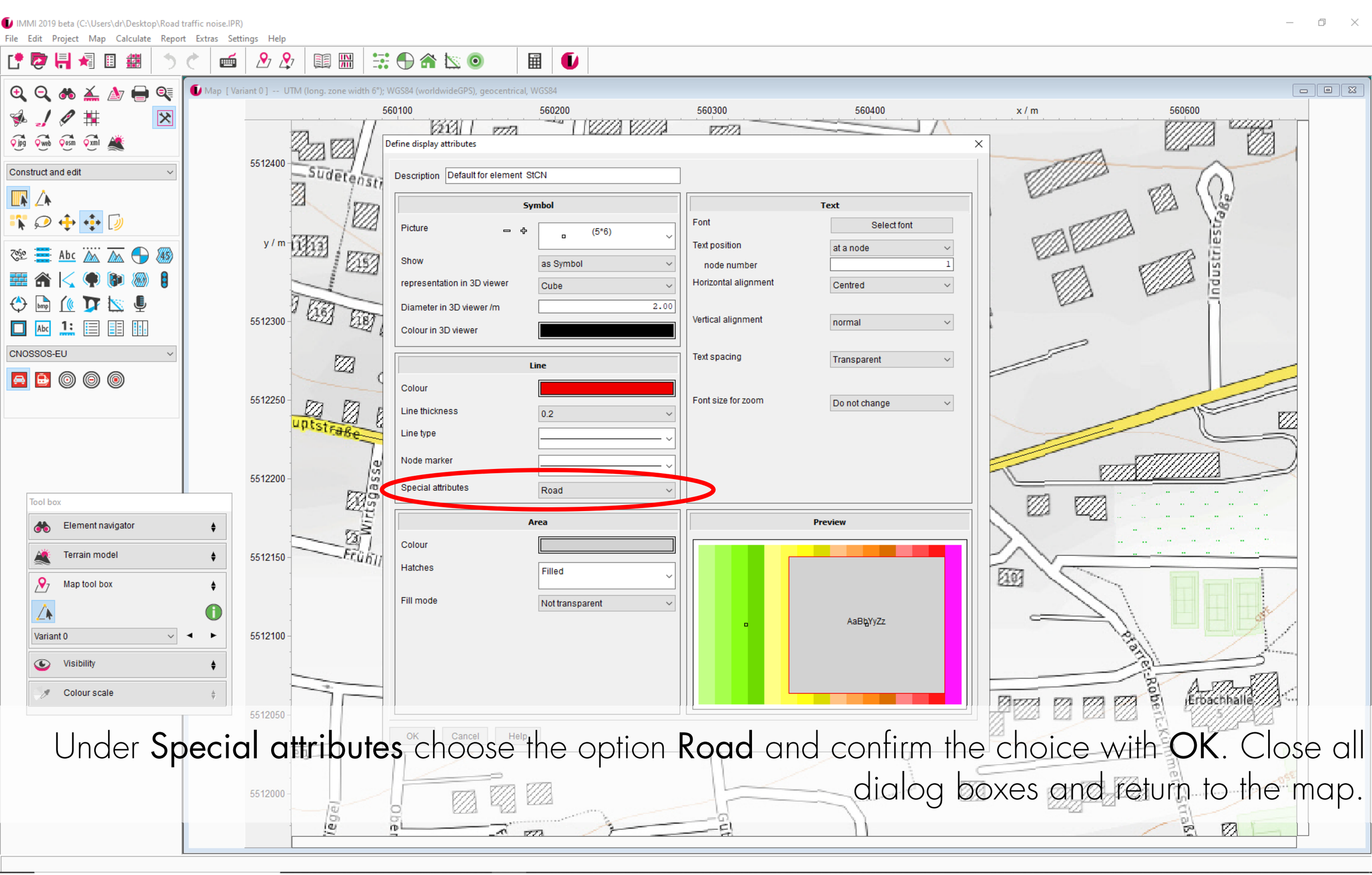
Use **Cross profile d(SQ)**, enter **2**m.



The road element is shown as a red line on the map. Optionally you can change this. Click on the button in the line **Presentation** to open the *Token attributes* dialog box.



Choose the first entry in the list – **Default for element STCN** – and click on **Edit ...**.



Under **Special attributes** choose the option **Road** and confirm the choice with **OK**. Close all dialog boxes and return to the map.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

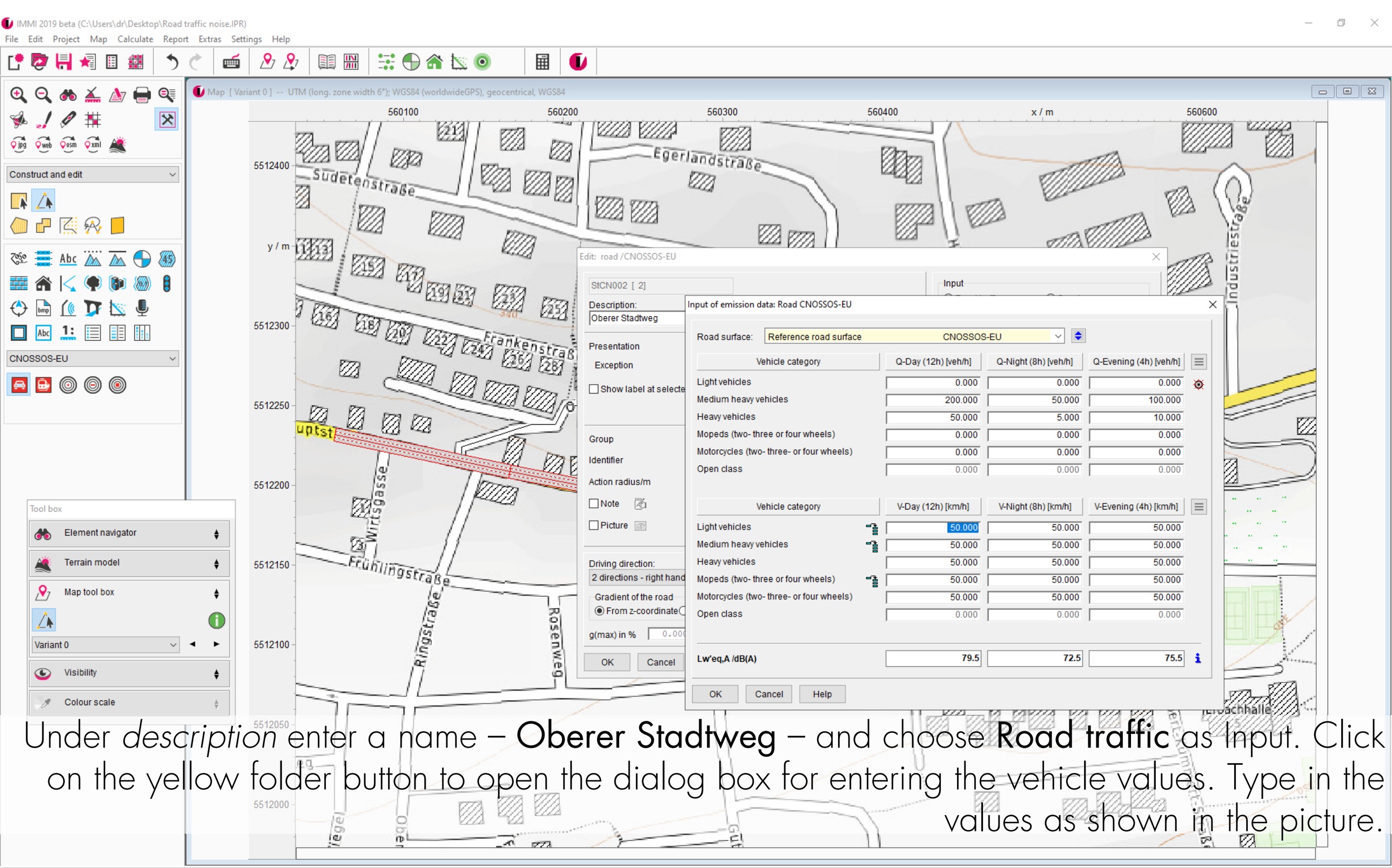
Map tool box

Variant 0

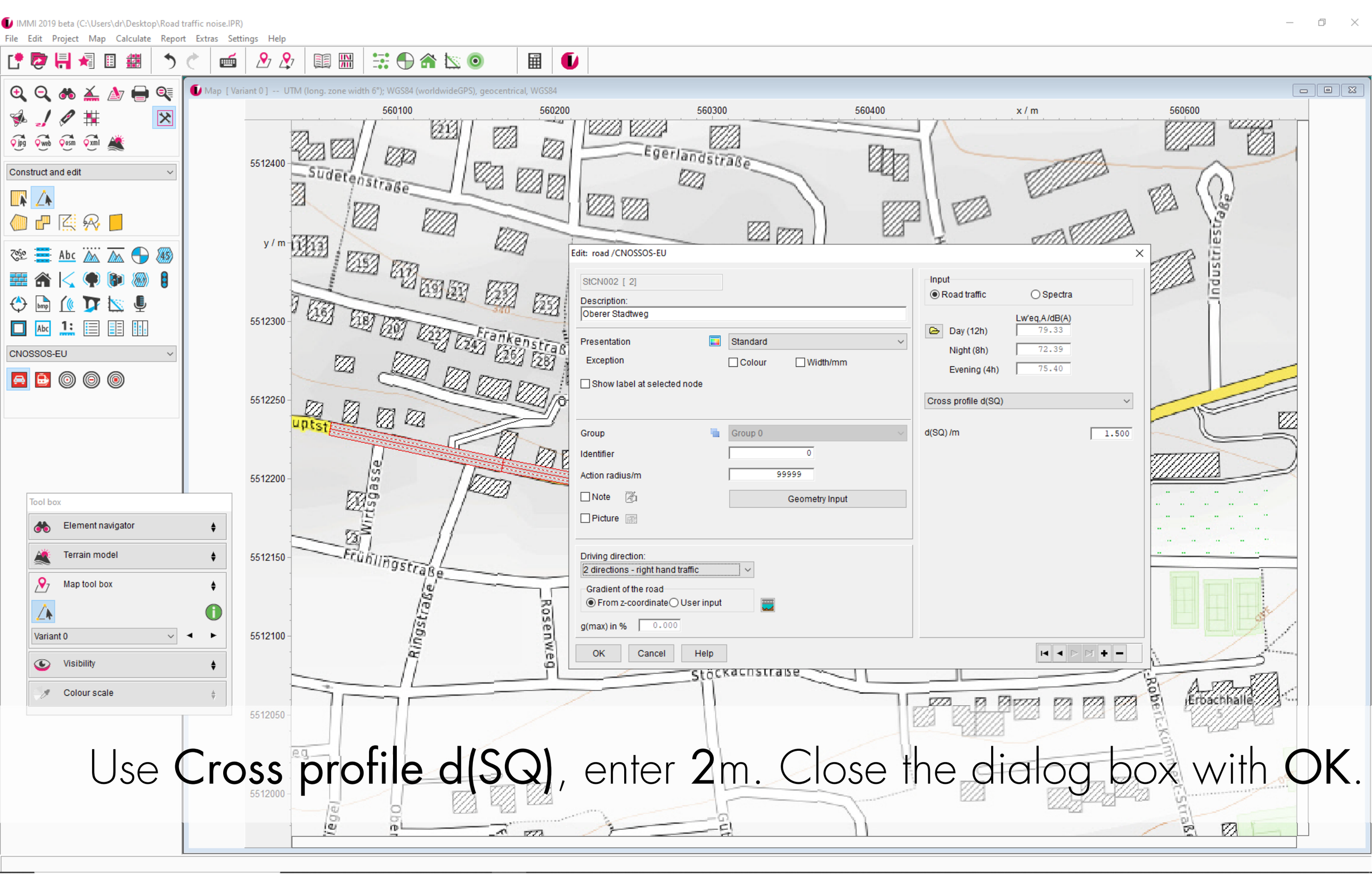
Visibility

Colour scale

Design one more road element, the “Oberer Stadtweg”.



Under *description* enter a name – **Oberer Stadtweg** – and choose **Road traffic** as Input. Click on the yellow folder button to open the dialog box for entering the vehicle values. Type in the values as shown in the picture.



Use **Cross profile d(SQ)**, enter **2**m. Close the dialog box with **OK**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Zoom in the crossroad area using the mouse. In the next step we will digitize a house element.

Open Project ...

Be sure that you use the **draw element** function and use the **house element** from the element library *Standard* for digitizing a new element.

CA1 Heißt die Elementbibliothek "Standard"?
Carrillo, Angela; 21.08.2019

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

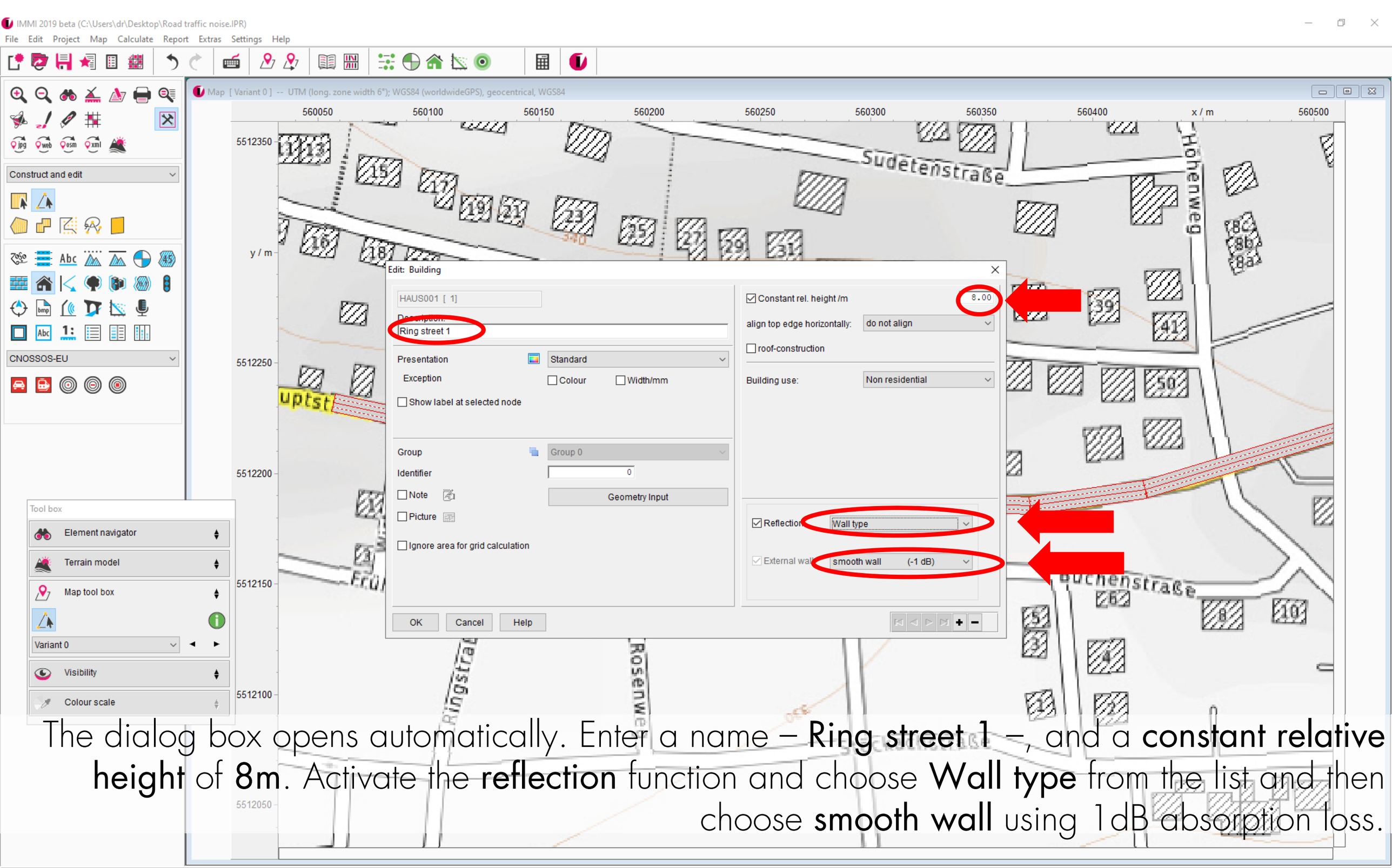
Variant 0

Visibility

Colour scale

Start with your first click in the lower left-hand corner (red cross) and make your last click – with right mouse button - on the lower right-hand corner (blue cross). Area elements in IMMI will be closed automatically, therefore it is not necessary to click on the first node.

Open Project ...



The dialog box opens automatically. Enter a name – **Ring street 1** –, and a **constant relative height** of **8m**. Activate the **reflection** function and choose **Wall type** from the list and then choose **smooth wall** using 1dB absorption loss.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Edit: Building

HAUS001 [1]

Description: Ring street 1

Presentation: Standard

Exception: Colour Width/mm

Show label at selected node

Group: Group 0

Identifier: 0

Note

Picture

Geometry Input

Ignore area for grid calculation

Constant rel. height /m: 8.00

align top edge horizontally: do not align

roof-construction

Building use: Non residential

Reflection: Wall type

External wall: smooth wall (-1 dB)

OK Cancel Help

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

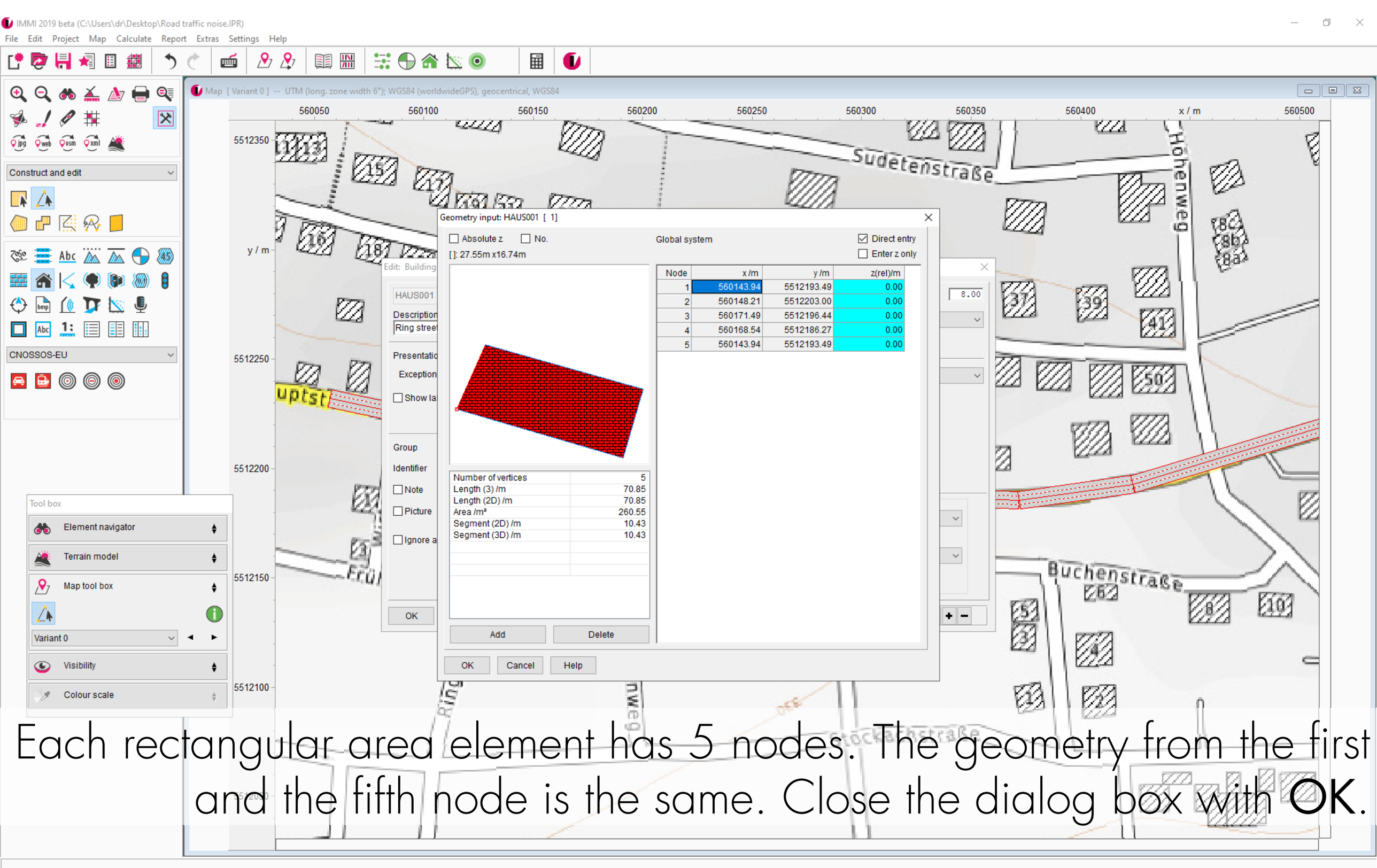
Visibility

Colour scale

Construct and edit

CNOSSOS-EU

Click on **Geometry Input** to check the number of nodes.



Each rectangular area element has 5 nodes. The geometry from the first and the fifth node is the same. Close the dialog box with **OK**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

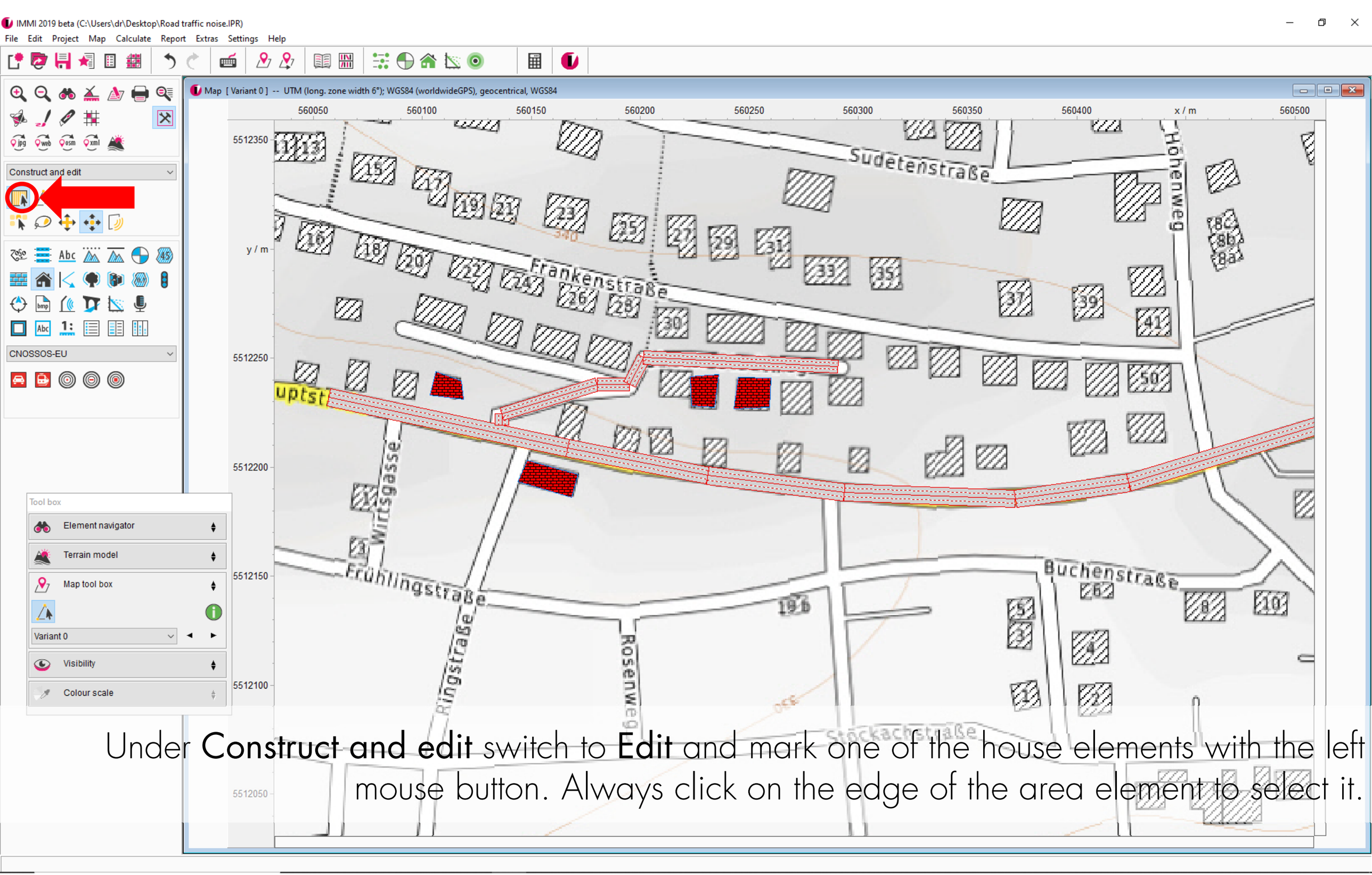
Map tool box

Variant 0

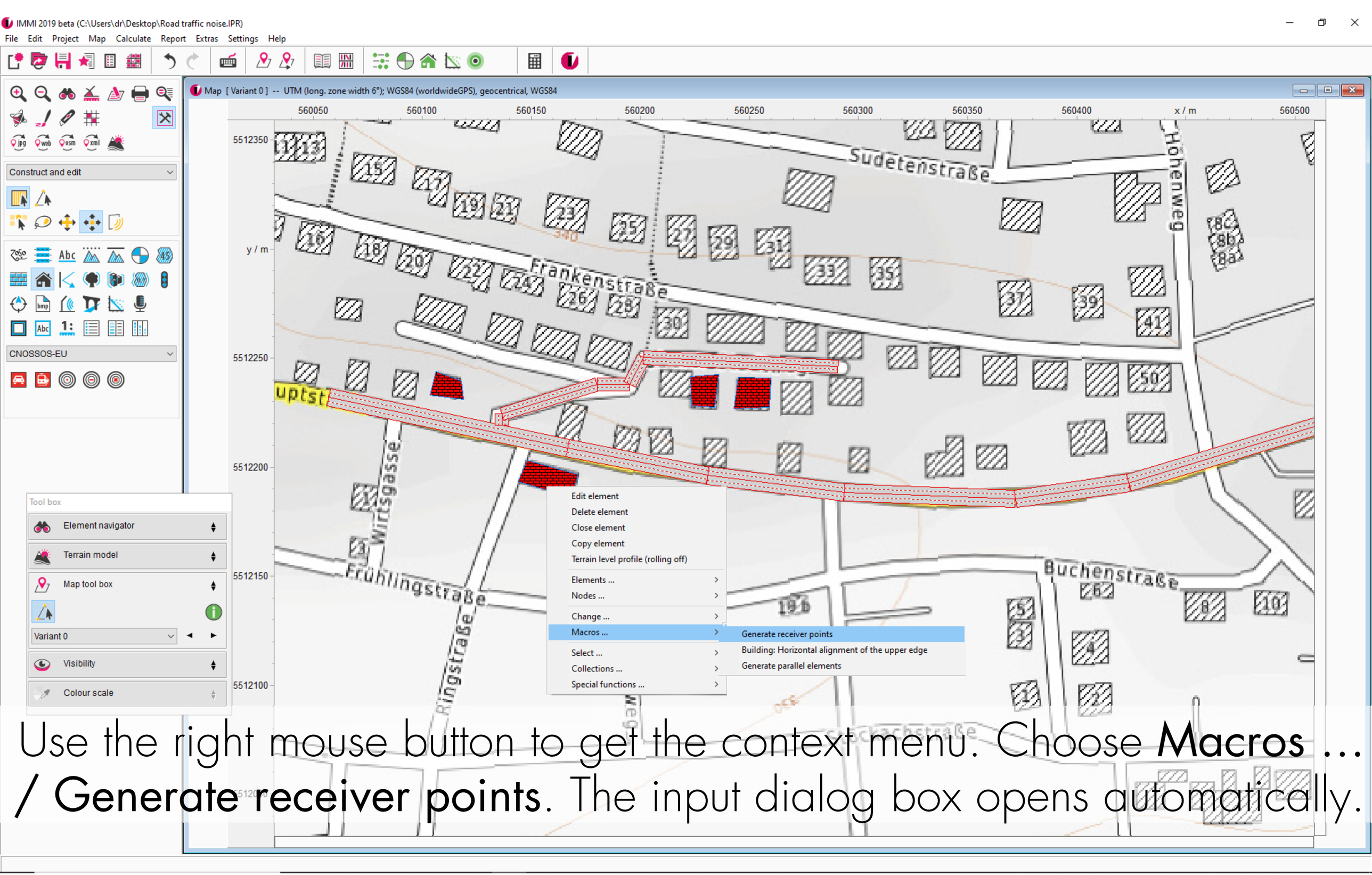
Visibility

Colour scale

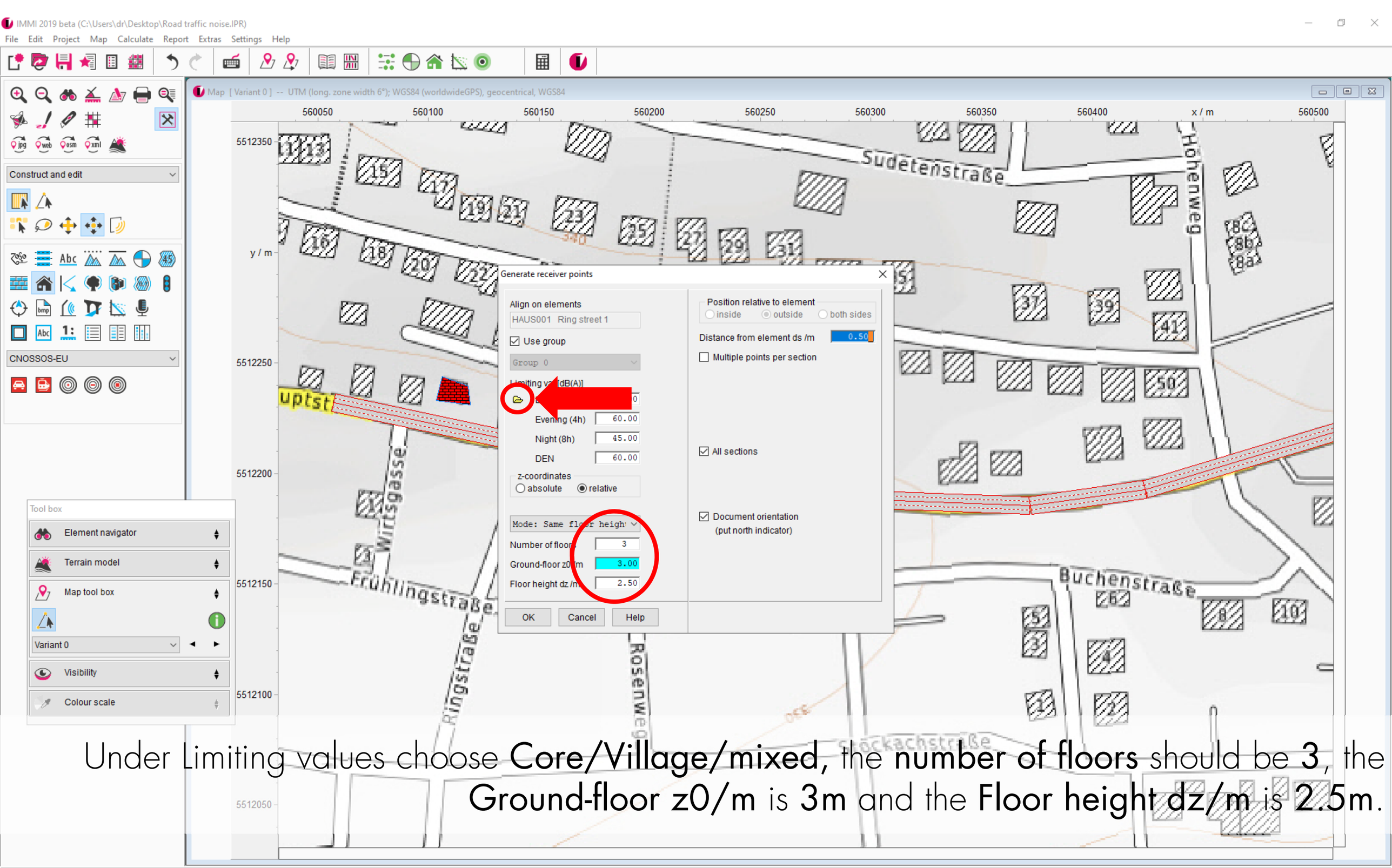
Optionally you can digitize some more buildings.



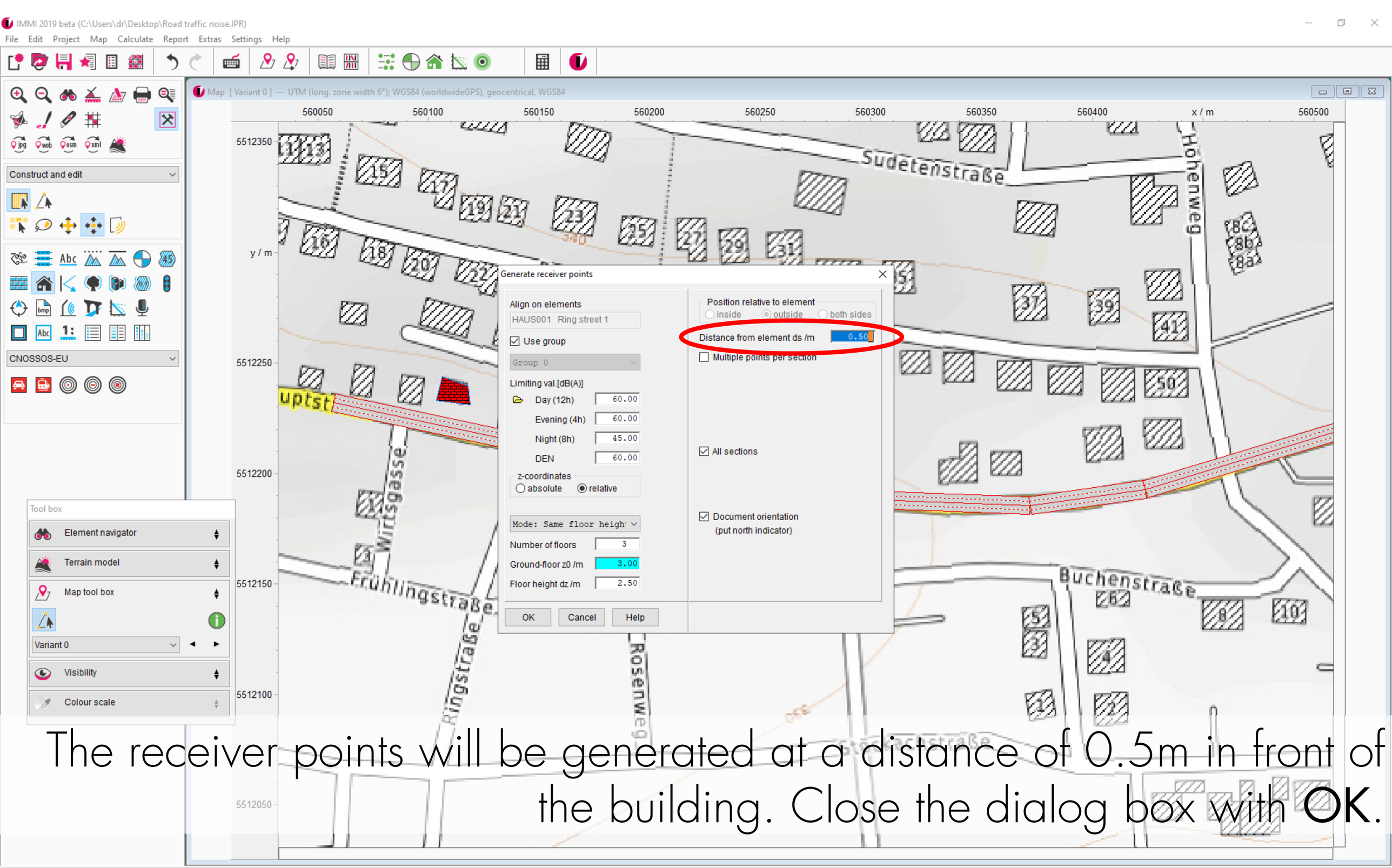
Under **Construct and edit** switch to **Edit** and mark one of the house elements with the left mouse button. Always click on the edge of the area element to select it.



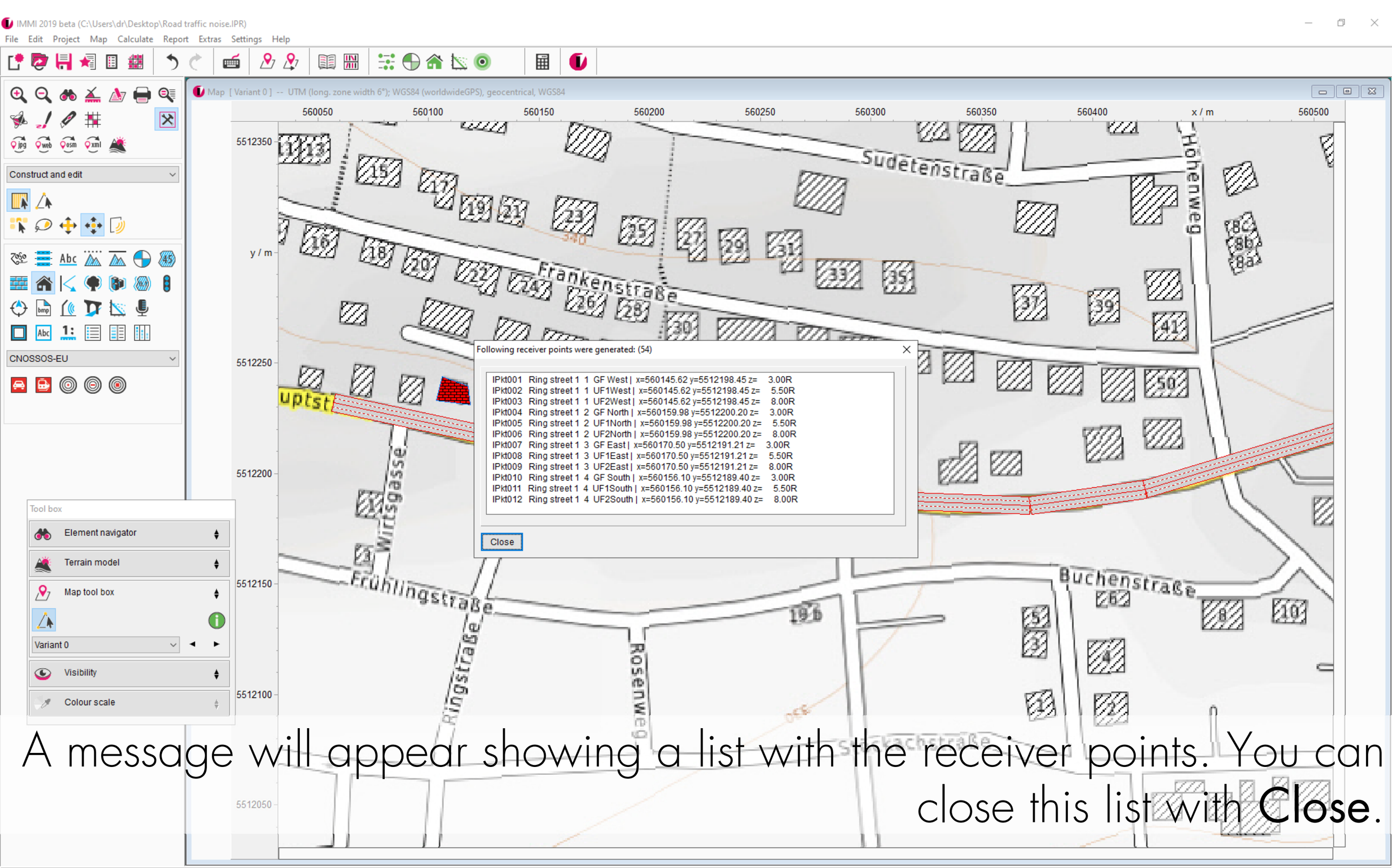
Use the right mouse button to get the context menu. Choose **Macros ... / Generate receiver points**. The input dialog box opens automatically.



Under Limiting values choose **Core/Village/mixed**, the **number of floors** should be **3**, the **Ground-floor z0/m** is **3m** and the **Floor height dz/m** is **2.5m**.



The receiver points will be generated at a distance of 0.5m in front of the building. Close the dialog box with **OK**.



A message will appear showing a list with the receiver points. You can close this list with **Close**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

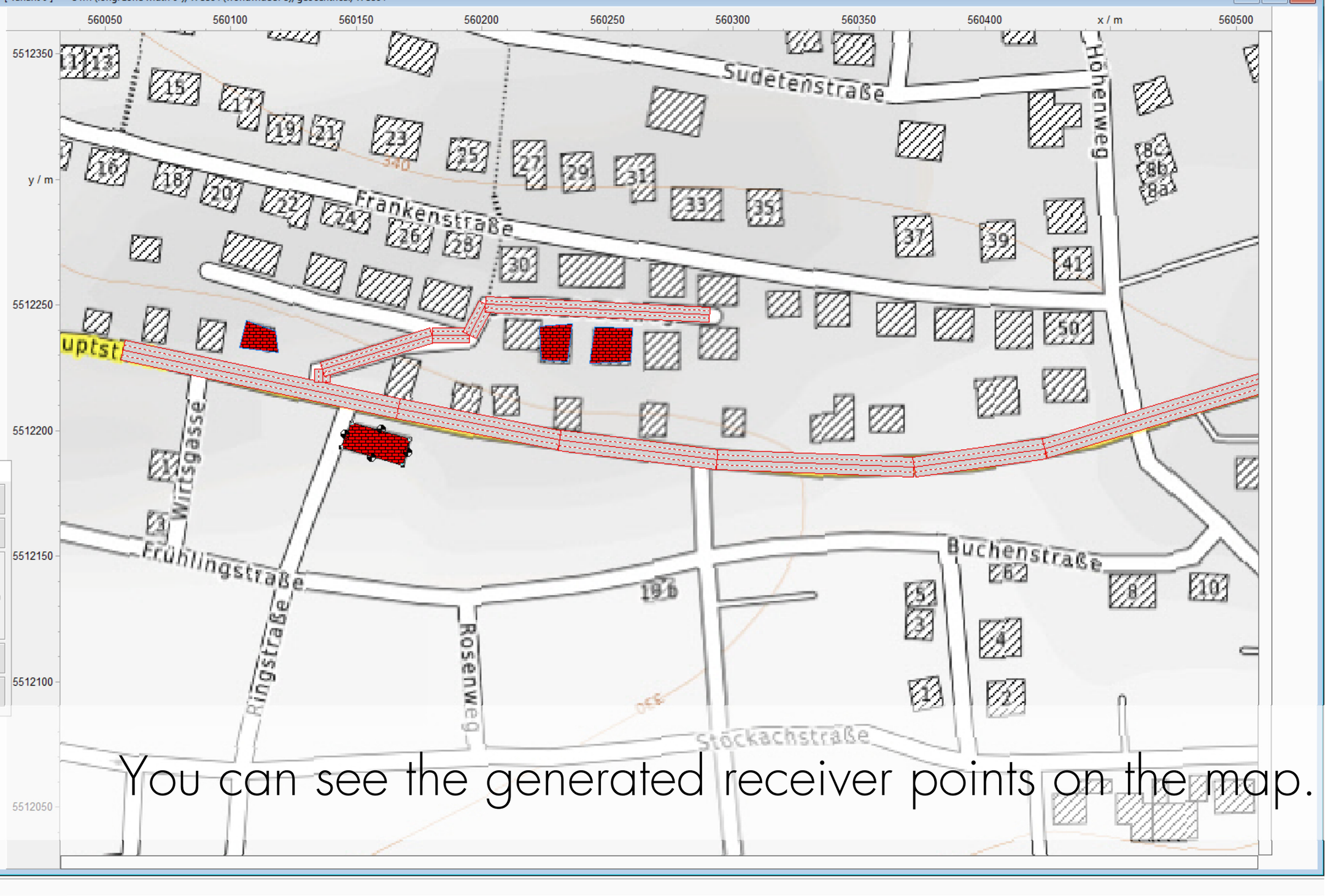
Terrain model

Map tool box

Variant 0

Visibility

Colour scale



You can see the generated receiver points on the map.

IMMI 2018 (C:\Users\dr\Desktop\Verkehr.IPR)

Datei Bearbeiten Projekt Lageplan Berechnung Bericht Extras Einstellungen Hilfe

Lageplan [Variante 0] -- UTM (Streifenbreite 6°), nördliche Hemisphäre; WGS84 (Weltweit GPS), geozentrisch

Konstruieren und Bearbeiten

DIN 18005

Toolbox

Element-Navigator

Geländemodell

Toolbox Plan

Variante 0

Sichtbarkeit

Farbskala

Get a 3D view to check your project. Start the viewer by clicking on the corresponding icon.

Projekt laden ...

IMMI 2018 (C:\Users\dr\Desktop\Verkehr.IPR)

Datei Bearbeiten Projekt Lageplan Berechnung Bericht Extras Einstellungen Hilfe

3D Viewer

Inhaltsverzeichnis Ansicht

Vertical 15
Tilt 0
Horizontal 134

Lights
Shadows 30

Base plane
Wireframe
Edges
Reference point

Scale Z (%) 100
Scale M (%) 100

Toolbox

Element-Navigator

Geländemodell

Toolbox Plan

Variante 0

Sichtbarkeit

Farbskala

560150 560200 560250 560300 x / m 560400

Sudetenstraße

Frankenstraße

Wirtsgasse

Frühlingstraße

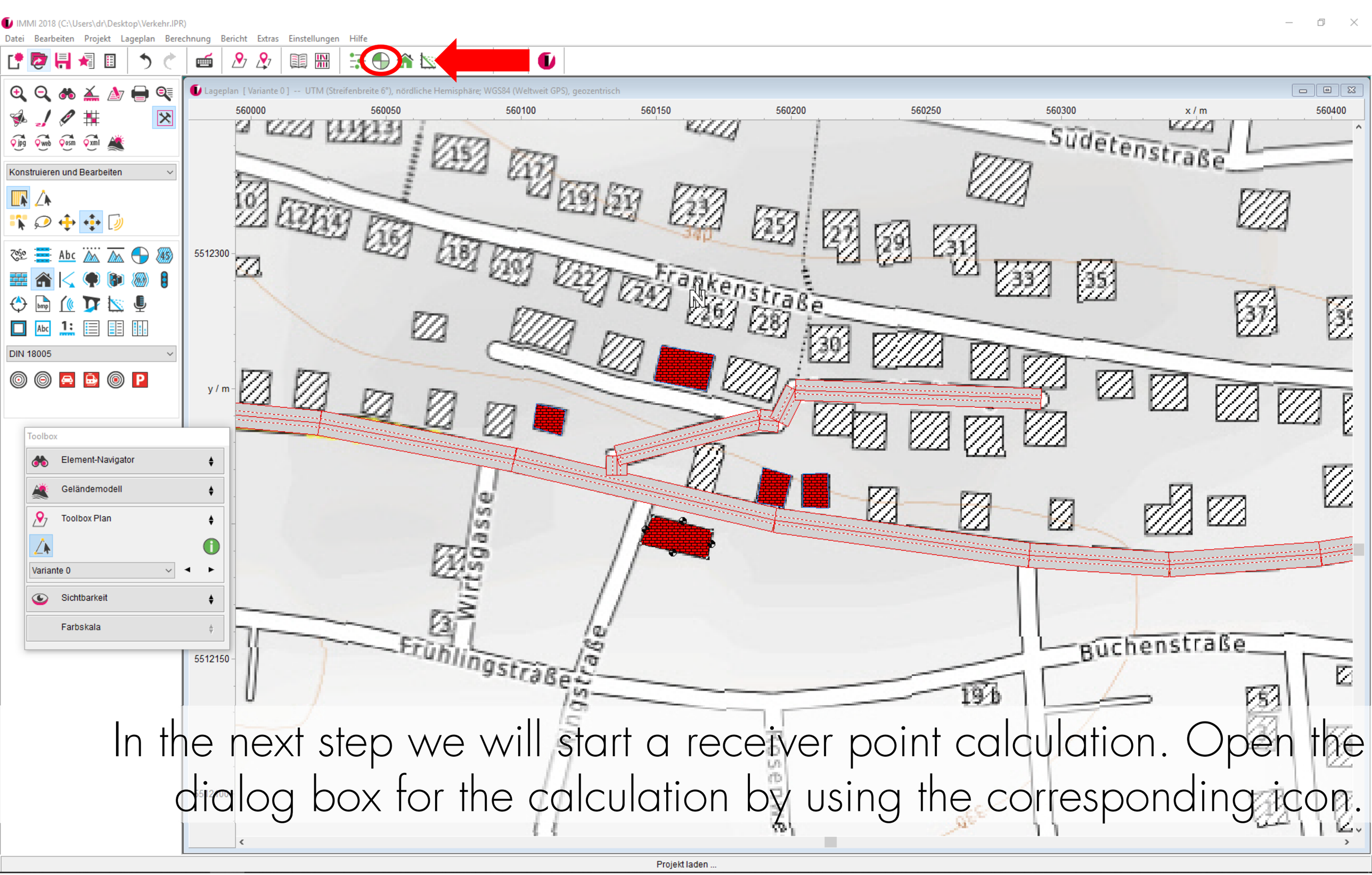
Buchenstraße

5512150

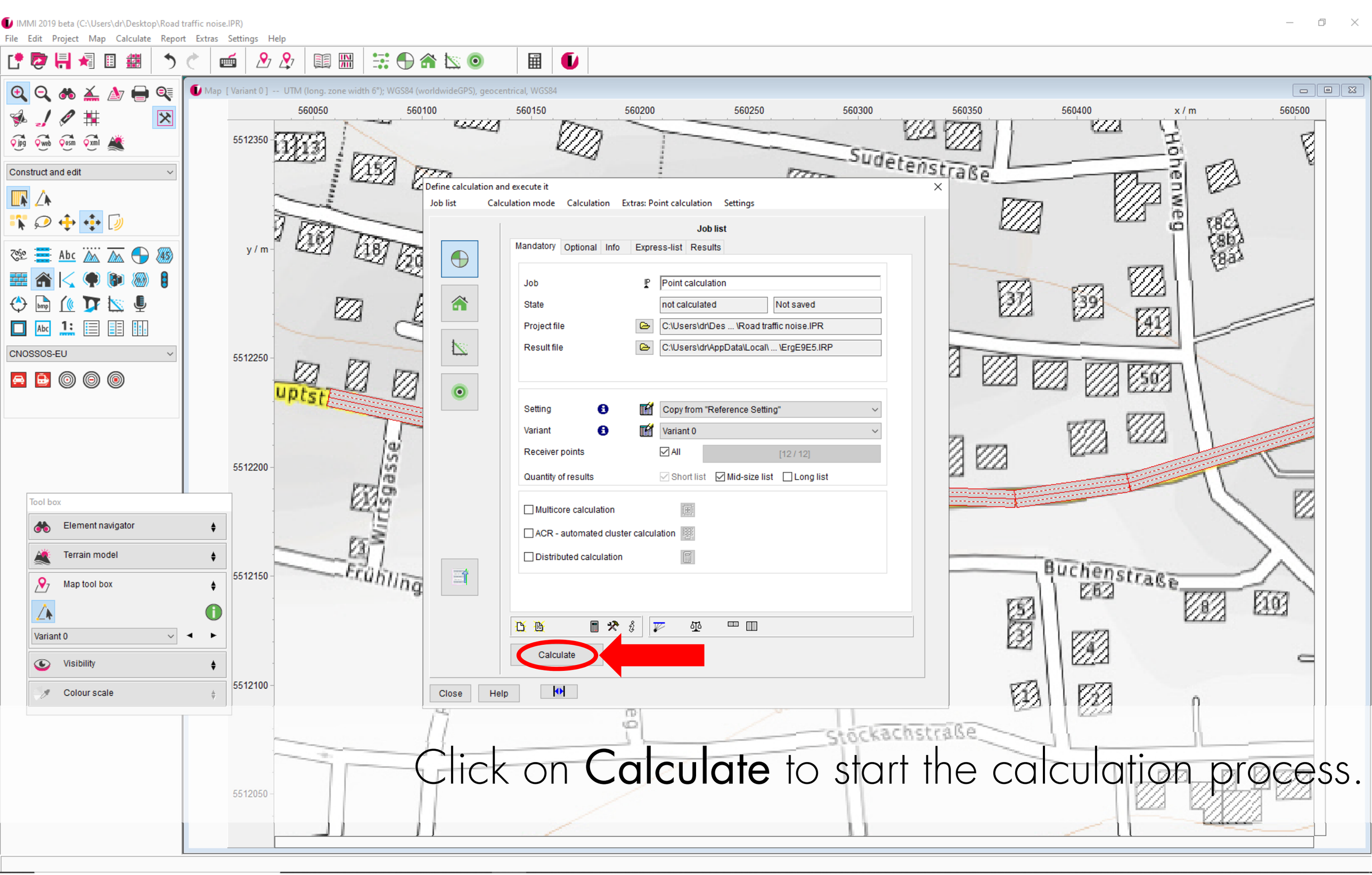
5512100

Projekt laden ...

Explore the functionalities of the 3D viewer. Close the viewer by using the cross in the upper right hand corner.



In the next step we will start a receiver point calculation. Open the dialog box for the calculation by using the corresponding icon.



Click on **Calculate** to start the calculation process.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Variant 0]

Define calculation and execute it

Job list | Calculation mode | Calculation | Extras: Point calculation | Settings

Job list

Mandatory | Optional | Info | Express-list | Results

Clic a receiver point: further information will be displayed

Job:	Point calculation
Project:	Road traffic noise.IPR
Project:	ErgE9E5.IRP
Setting	Copy from "Reference Setting"
Variant	Variant 0

		Day (12h)	Evening 4h	Night (8h)	
	Exceeding	9	9	10	
IPkt001	Ring street 1 1 GF West	65.62	62.99	59.76	
IPkt002	Ring street 1 1 UF1West	65.37	62.73	59.50	
IPkt003	Ring street 1 1 UF2West	65.14	62.49	59.26	
IPkt004	Ring street 1 2 GF North	69.52	66.95	63.71	
IPkt005	Ring street 1 2 UF1North	69.04	66.46	63.22	
IPkt006	Ring street 1 2 UF2North	68.47	65.88	62.64	
IPkt007	Ring street 1 3 GF East	64.26	61.72	58.47	
IPkt008	Ring street 1 3 UF1East	64.00	61.45	58.21	
IPkt009	Ring street 1 3 UF2East	63.83	61.27	58.03	
IPkt010	Ring street 1 4 GF South	43.41	40.78	37.54	4
IPkt011	Ring street 1 4 UF1South	43.03	40.41	37.17	4
IPkt012	Ring street 1 4 UF2South	51.33	48.71	45.43	5

Calculate | Unlock

Close | Help

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

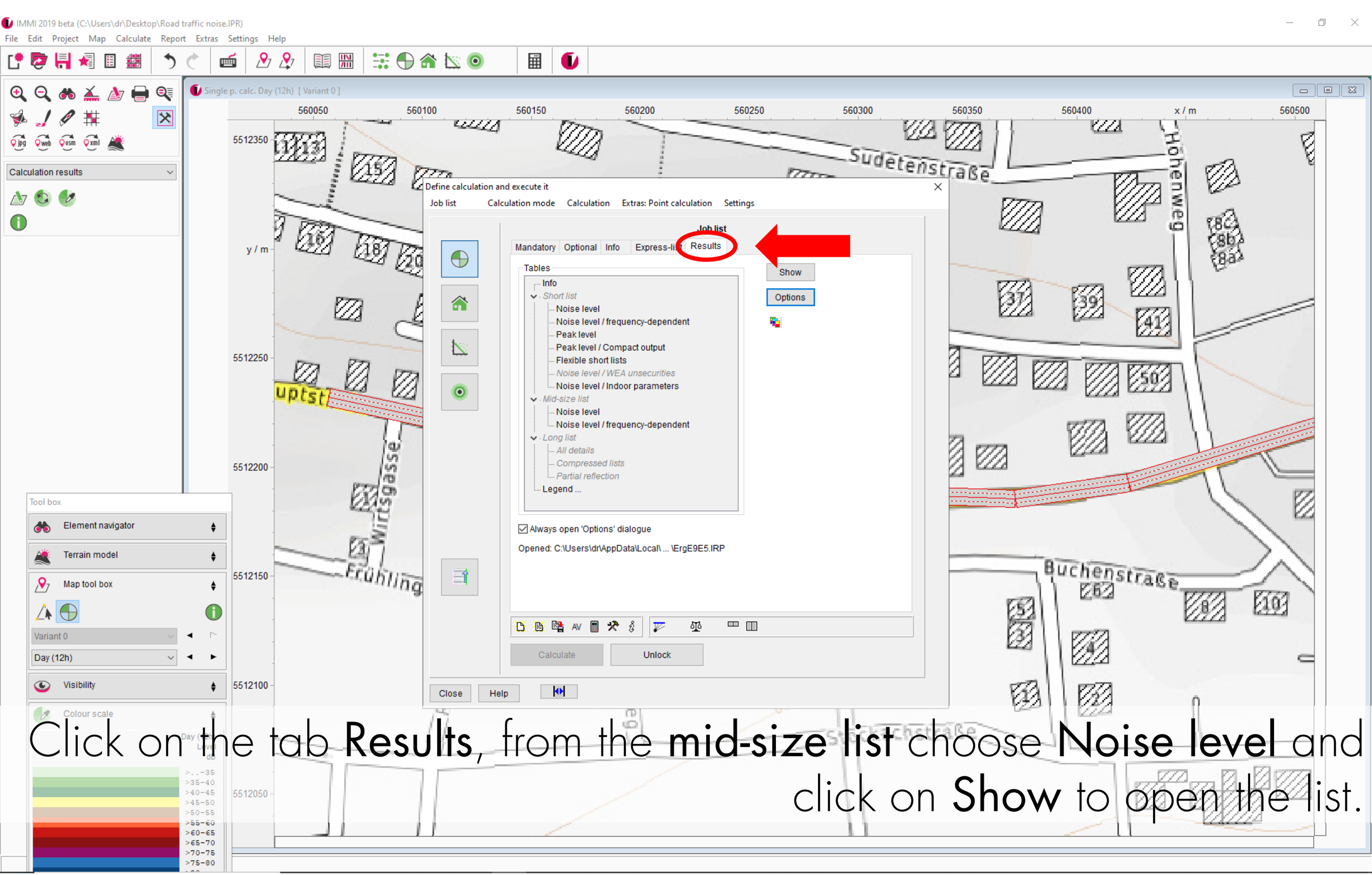
Day (12h)

Visibility

Colour scale

>...-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80

The results for all time periods are shown in the **Express-list**. The results in red indicate that the limit value has been exceeded.



Click on the tab **Results**, from the **mid-size list** choose **Noise level** and click on **Show** to open the list.

Mid-size list [110 Rows]

List Edit View

Mid-size list »		Point calculation							
Noise prediction		Rating following: Lden							
IPkt001 »	Ring street 1 1 GF Wes	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 3.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.973	64.973	62.521	62.521	59.262	59.262	67.264	67.264
StCN002 »	Oberer Stadtweg	57.050	65.623	53.118	62.992	50.108	59.760	58.471	67.803
	Sum		**65.623**		**62.992**		**59.760**		**67.803**

IPkt002 »	Ring street 1 1 UF1We	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 5.50 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.693	64.693	62.241	62.241	58.982	58.982	66.984	66.984
StCN002 »	Oberer Stadtweg	56.944	65.368	53.012	62.730	50.001	59.499	58.365	67.543
	Sum		**65.368**		**62.730**		**59.499**		**67.543**

IPkt003 »	Ring street 1 1 UF2We	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 8.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.415	64.415	61.964	61.964	58.704	58.704	66.706	66.706
StCN002 »	Oberer Stadtweg	56.988	65.137	53.054	62.489	50.043	59.258	58.407	67.305
	Sum		**65.137**		**62.489**		**59.258**		**67.305**

IPkt004 »	Ring street 1 2 GF Nor	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560159.98 m		y = 5512200.20 m		z = 3.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	69.099	69.099	66.648	66.648	63.389	63.389	71.390	71.390
StCN002 »	Oberer Stadtweg	59.121	69.515	55.187	66.948	52.177	63.706	60.541	71.734
	Sum		**69.515**		**66.948**		**63.706**		**71.734**

IPkt005 »	Ring street 1 2 UF1Nor	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560159.98 m		y = 5512200.20 m		z = 5.50 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	68.578	68.578	66.125	66.125	62.867	62.867	70.868	70.868
StCN002 »	Oberer Stadtweg	59.048	69.037	55.115	66.456	52.104	63.217	60.468	71.247
	Sum		**69.037**		**66.456**		**63.217**		**71.247**

IPkt006 »	Ring street 1 2 UF2Nor	Variant 0 Setting: Copy from "Reference Setting"

The mid-size list is displayed. For each receiver point you can see the noise impact of each source and the total result.

Mid-size list [110 Rows]

List Edit View

Mid-size list »		Point calculation							
Noise prediction		Rating following: Lden							
IPkt001 »	Ring street 1 1 GF Wes	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 3.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.973	64.973	62.521	62.521	59.262	59.262	67.264	67.264
StCN002 »	Oberer Stadtweg	57.050	65.623	53.118	62.992	50.108	59.760	58.471	67.803
	Sum		**65.623**		**62.992**		**59.760**		**67.803**

IPkt002 »	Ring street 1 1 UF1We	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 5.50 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.693	64.693	62.241	62.241	58.982	58.982	66.984	66.984
StCN002 »	Oberer Stadtweg	56.944	65.368	53.012	62.730	50.001	59.499	58.365	67.543
	Sum		**65.368**		**62.730**		**59.499**		**67.543**

IPkt003 »	Ring street 1 1 UF2We	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560145.62 m		y = 5512198.45 m		z = 8.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	64.415	64.415	61.964	61.964	58.704	58.704	66.706	66.706
StCN002 »	Oberer Stadtweg	56.988	65.137	53.054	62.489	50.043	59.258	58.407	67.305
	Sum		**65.137**		**62.489**		**59.258**		**67.305**

IPkt004 »	Ring street 1 2 GF Nor	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560159.98 m		y = 5512200.20 m		z = 3.00 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	69.099	69.099	66.648	66.648	63.389	63.389	71.390	71.390
StCN002 »	Oberer Stadtweg	59.121	69.515	55.187	66.948	52.177	63.706	60.541	71.734
	Sum		**69.515**		**66.948**		**63.706**		**71.734**

IPkt005 »	Ring street 1 2 UF1Nor	Variant 0 Setting: Copy from "Reference Setting"							
		x = 560159.98 m		y = 5512200.20 m		z = 5.50 m			
		Day (12h)		Evening (4h)		Night (8h)		DEN	
		L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A	L r,i,A	L r,A
		/dB	/dB	/dB	/dB	/dB	/dB	/dB	/dB
StCN001 »	Main Street 50km/h	68.578	68.578	66.125	66.125	62.867	62.867	70.868	70.868
StCN002 »	Oberer Stadtweg	59.018	69.037	55.115	66.459	52.104	63.217	60.468	71.247
	Sum		69.037		66.459		63.217		71.247

IPkt006 »	Ring street 1 2 UF2Nor	Variant 0 Setting: Copy from "Reference Setting"

You can close the list by using the corresponding icon. Also close the calculation dialog box and go back to the map content.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Variant 0]

Calculation results

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB

>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80
>80-..

560050 560100 560150 560200 560250 560300 560350 560400 x / m 560500

5512350 y / m 5512250 5512200 5512150 5512100 5512050

Sudetenstraße

Höhenweg

Frankenstraße

Wirtsgasse

Frühlingstraße

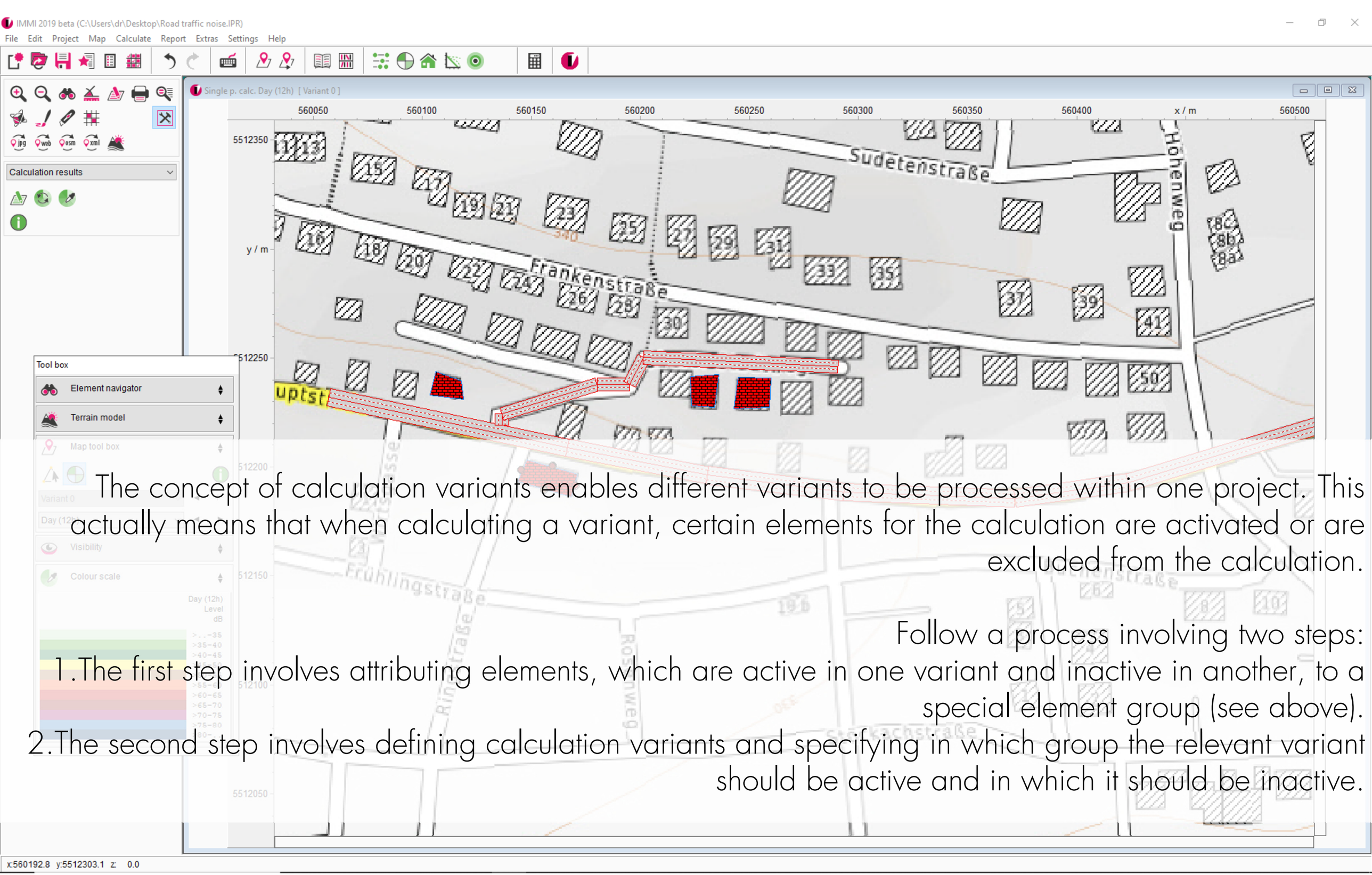
Ringstraße

Rosenweg

Buchenstraße

In the next step you will learn more about the concept using variants/scenarios in IMMI.

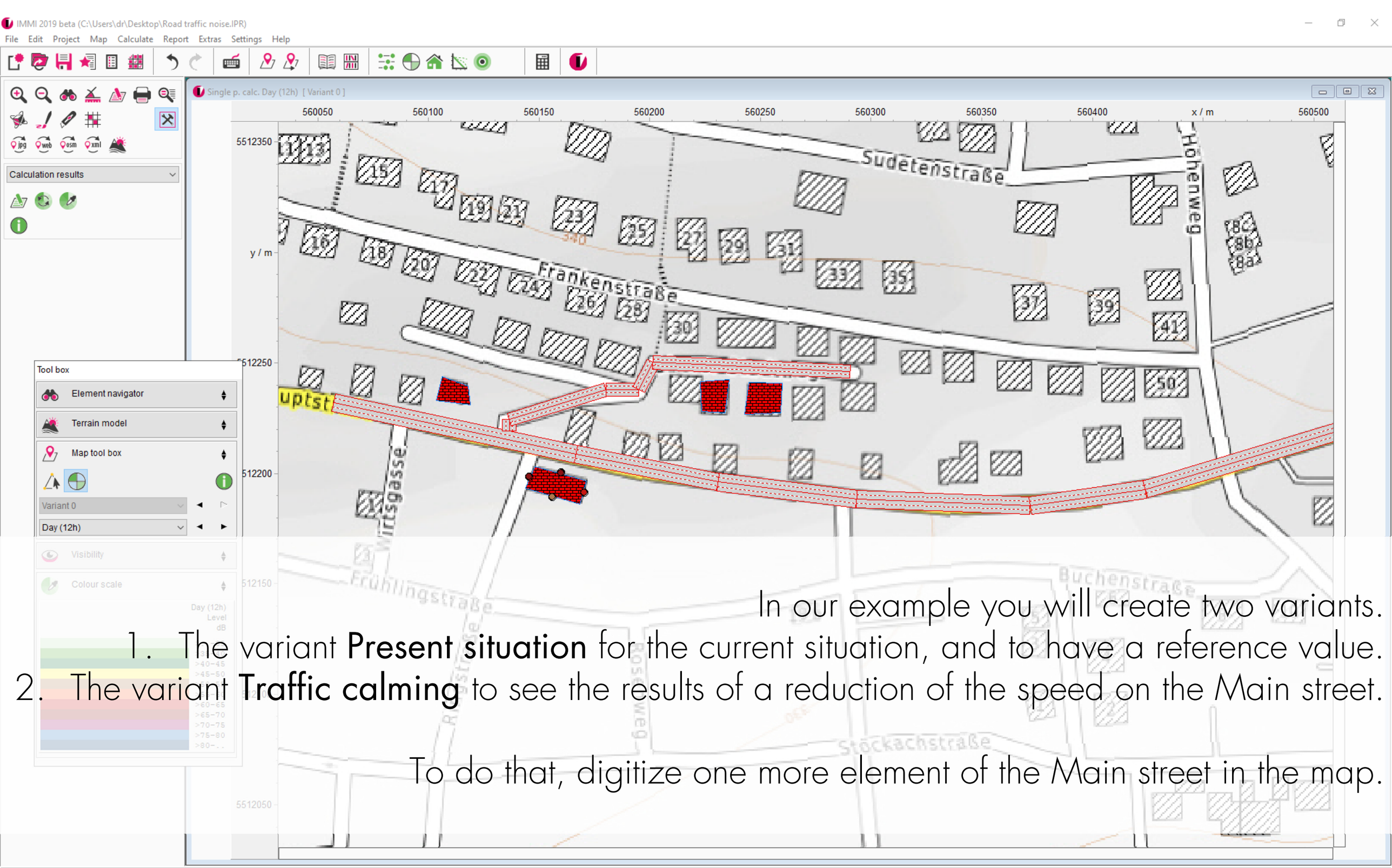
x:560192.8 y:5512303.1 z: 0.0



The concept of calculation variants enables different variants to be processed within one project. This actually means that when calculating a variant, certain elements for the calculation are activated or are excluded from the calculation.

Follow a process involving two steps:

1. The first step involves attributing elements, which are active in one variant and inactive in another, to a special element group (see above).
2. The second step involves defining calculation variants and specifying in which group the relevant variant should be active and in which it should be inactive.



In our example you will create two variants.

1. The variant **Present situation** for the current situation, and to have a reference value.
2. The variant **Traffic calming** to see the results of a reduction of the speed on the Main street.

To do that, digitize one more element of the Main street in the map.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

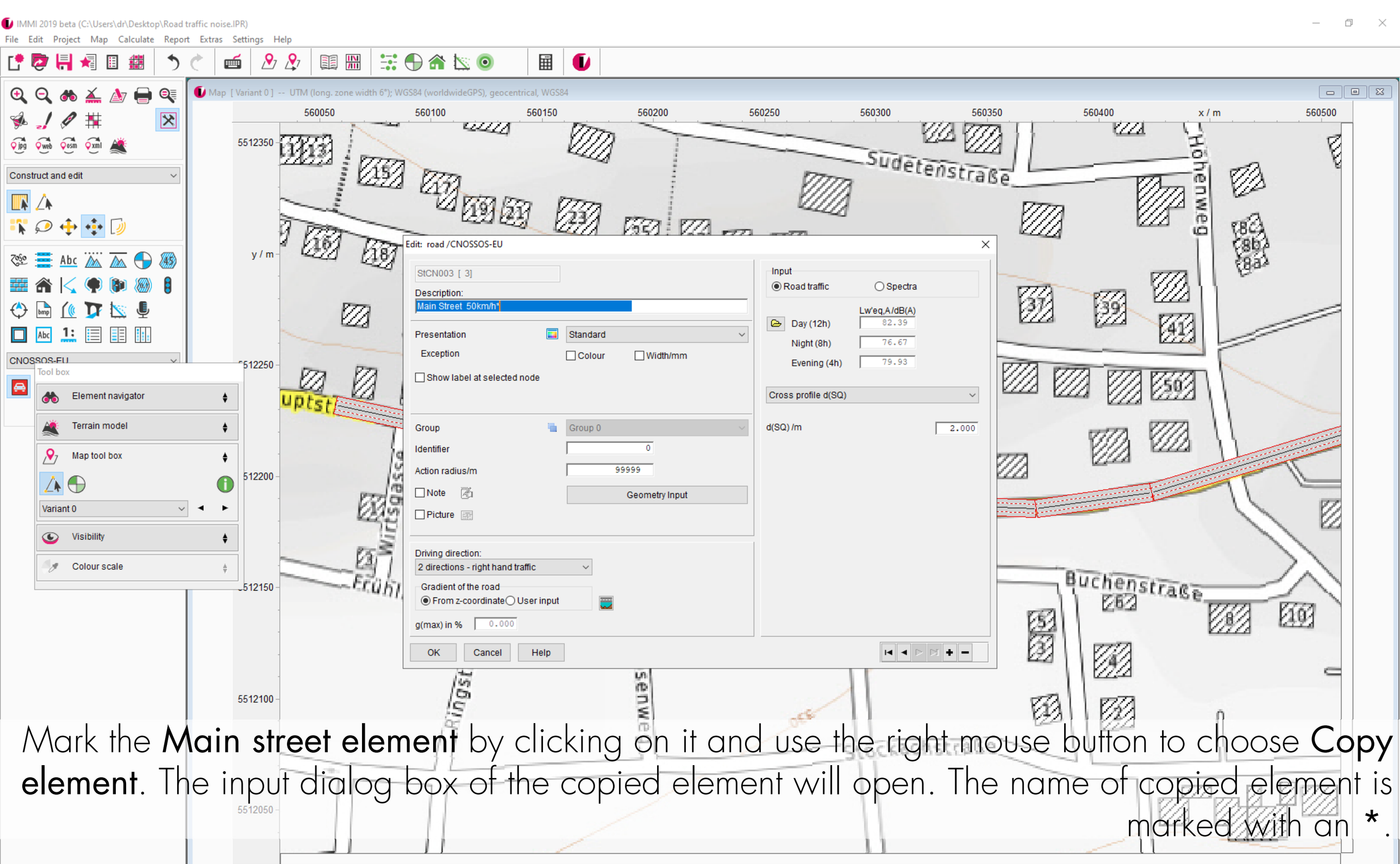
Variant 0

Visibility

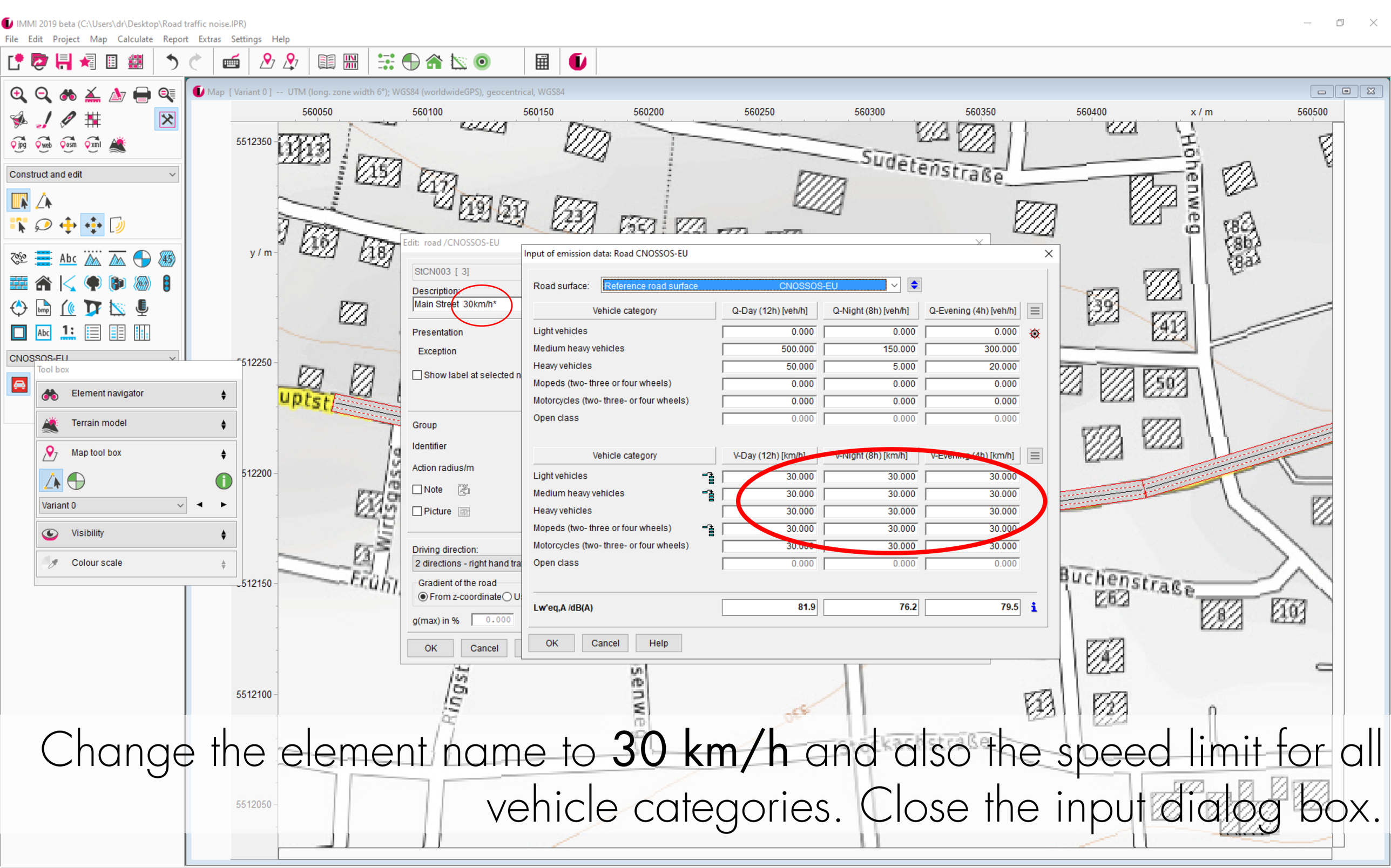
Colour scale

In the **Map tool box** switch to map view and check if the **Edit element** modus is activated.

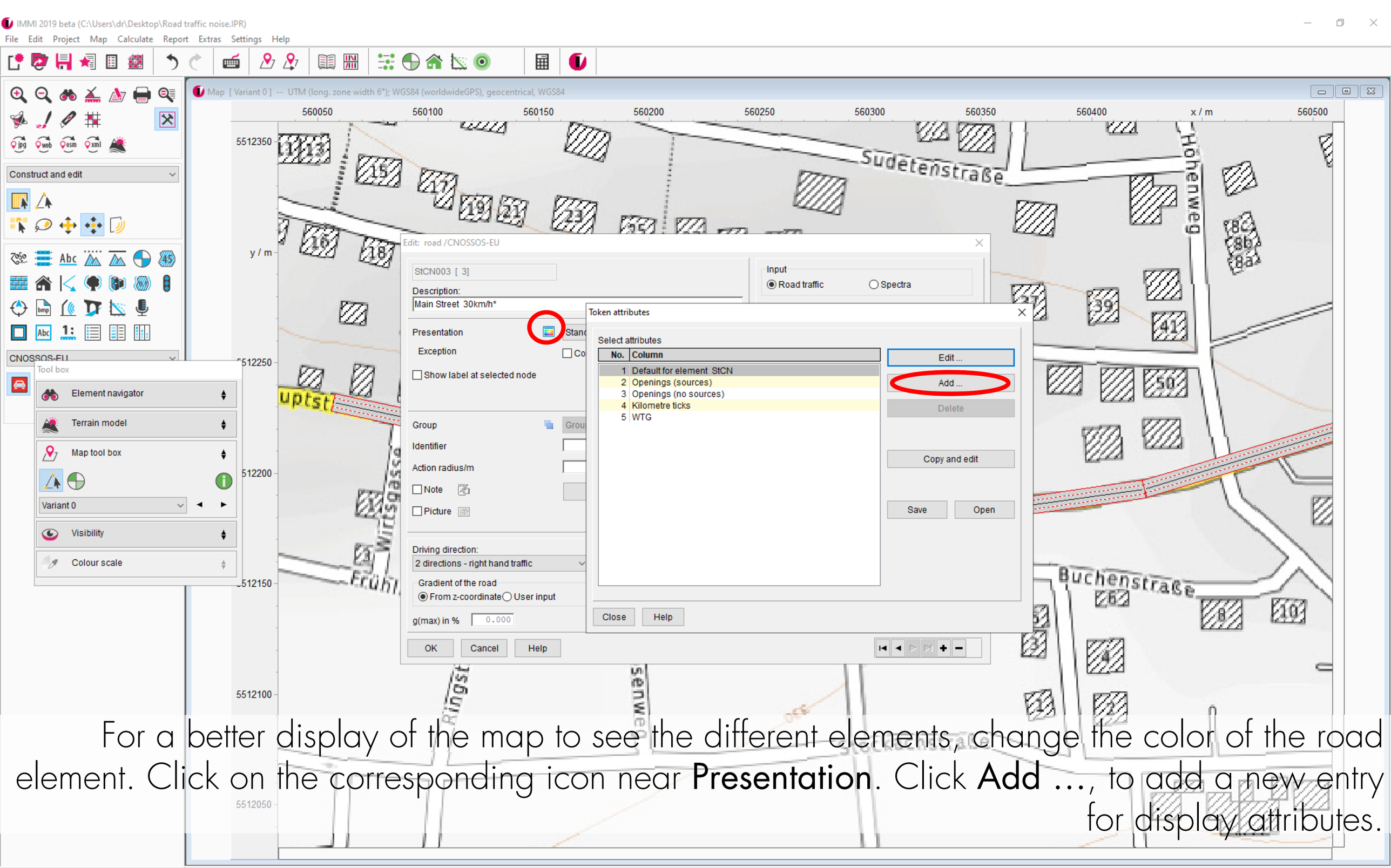
x:560136.4 y:5512347.1 z: 0.0



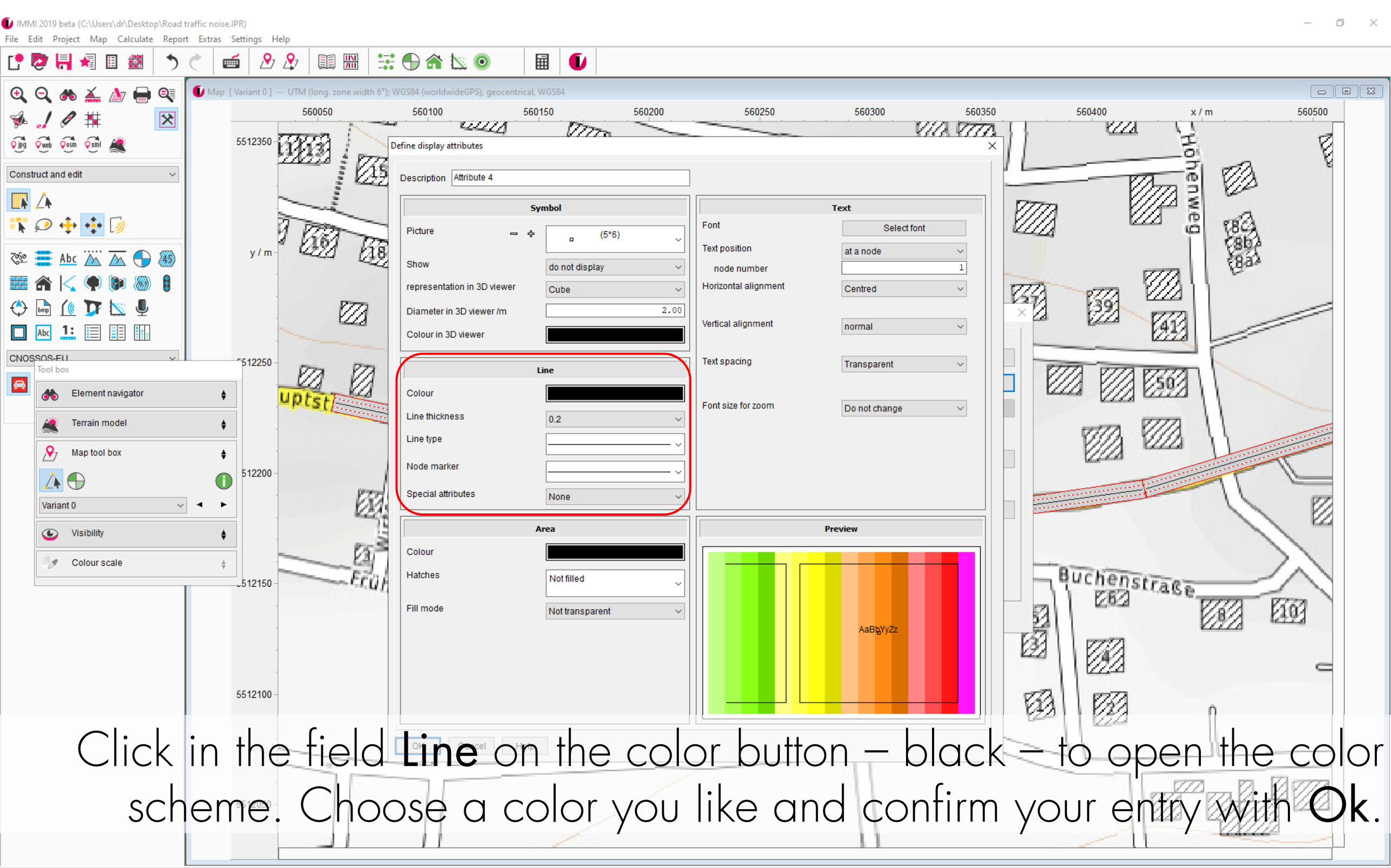
Mark the **Main street element** by clicking on it and use the right mouse button to choose **Copy element**. The input dialog box of the copied element will open. The name of copied element is marked with an ***.



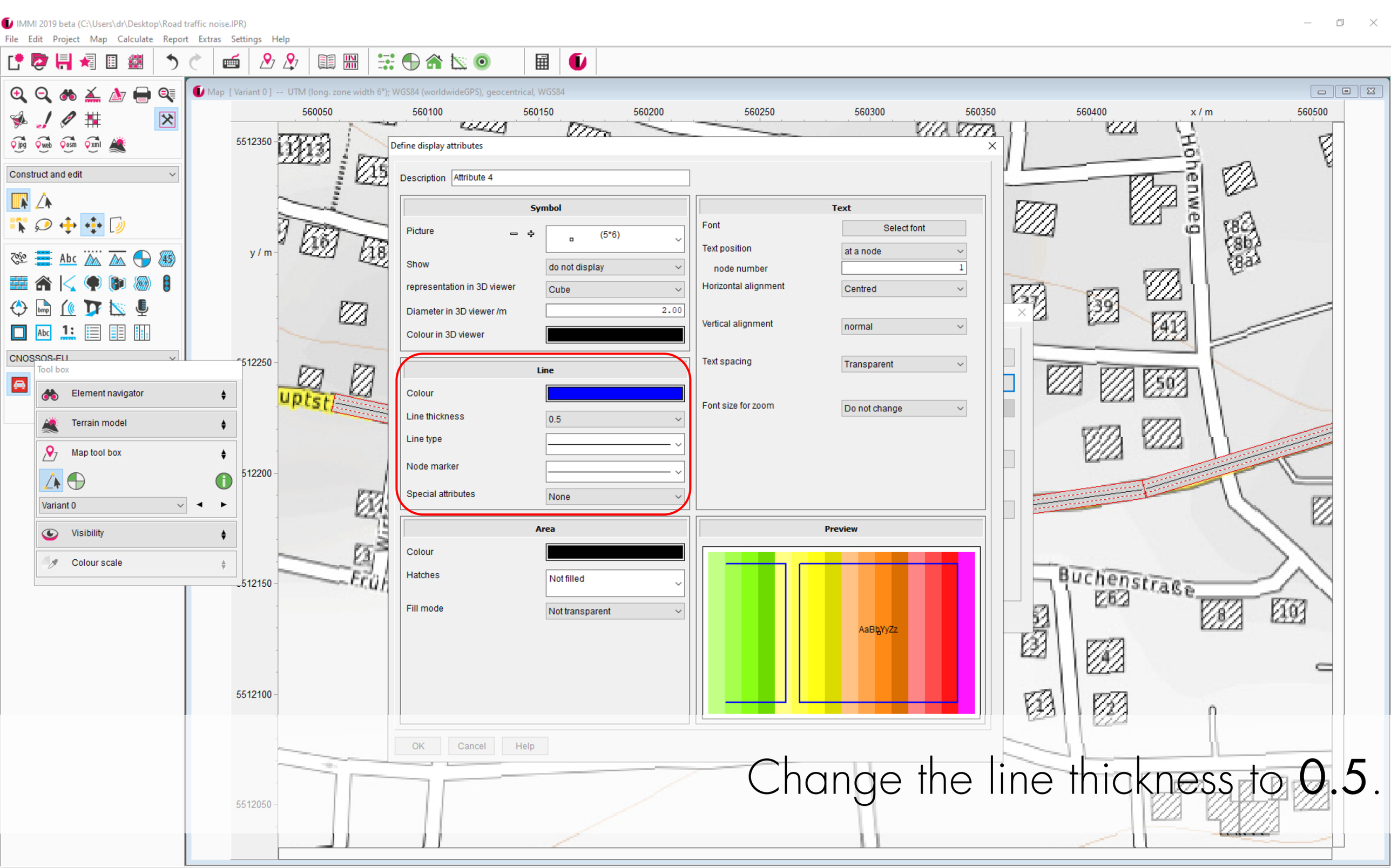
Change the element name to **30 km/h** and also the speed limit for all vehicle categories. Close the input dialog box.



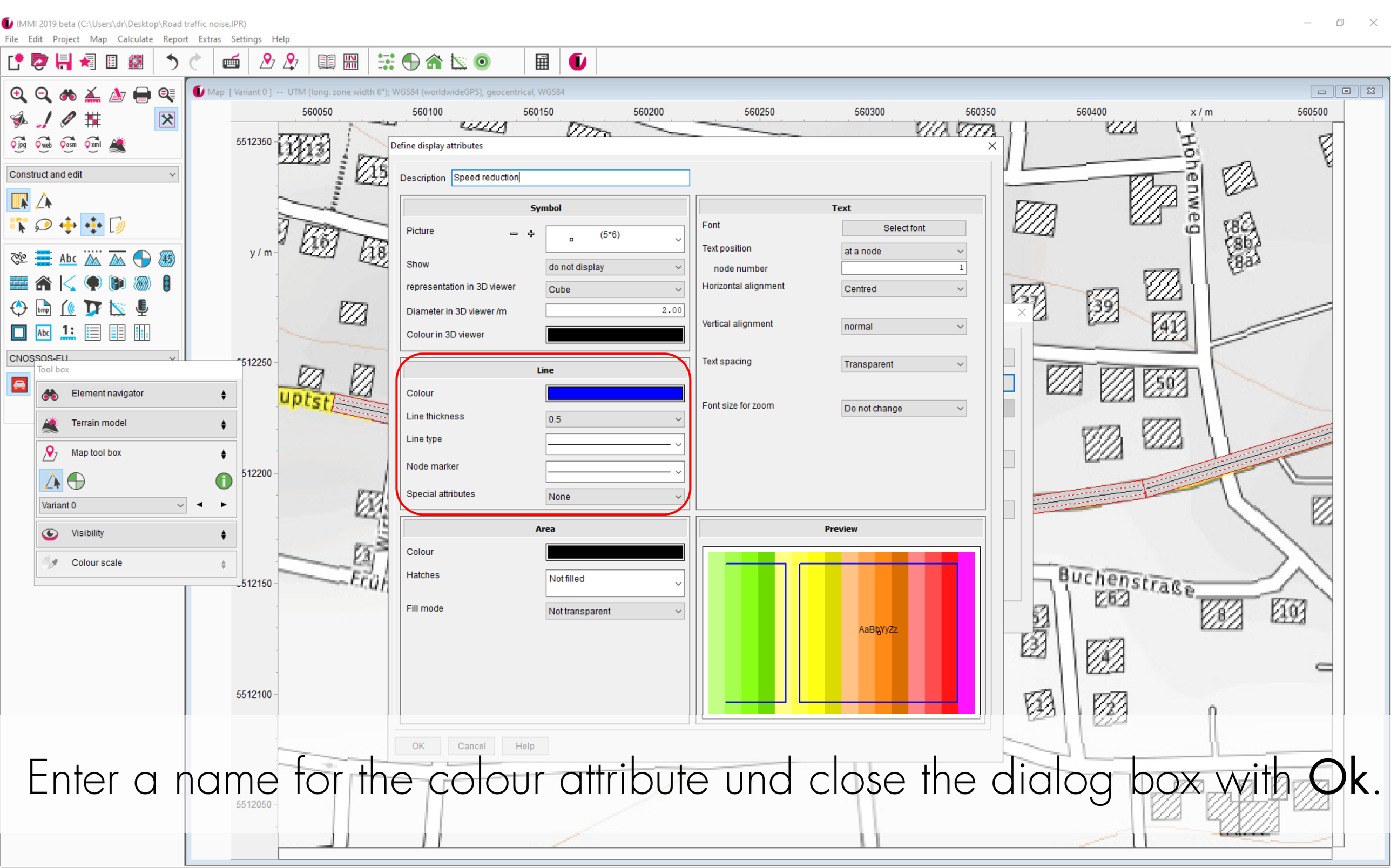
For a better display of the map to see the different elements, change the color of the road element. Click on the corresponding icon near **Presentation**. Click **Add ...**, to add a new entry for display attributes.



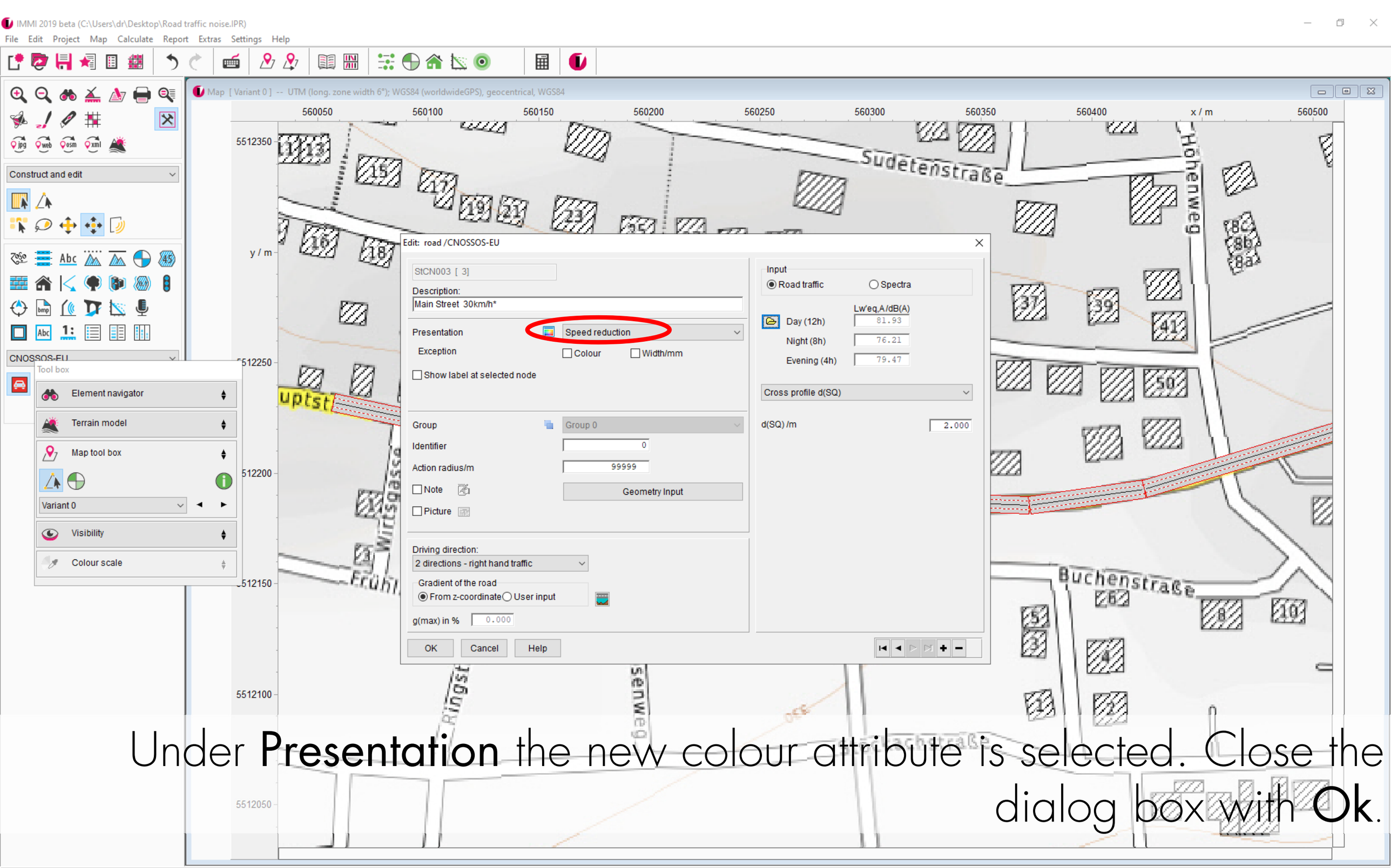
Click in the field **Line** on the color button – black – to open the color scheme. Choose a color you like and confirm your entry with **Ok**.



Change the line thickness to **0.5**.



Enter a name for the colour attribute und close the dialog box with **Ok**.



Under **Presentation** the new colour attribute is selected. Close the dialog box with **Ok**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

Variant 0

Visibility

Colour scale

Back to the map you can see both road elements.

x:560193.8 y:5512322.1 z: 0.0

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Variant 0] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Tool box

Element navigator

Terrain model

Map tool box

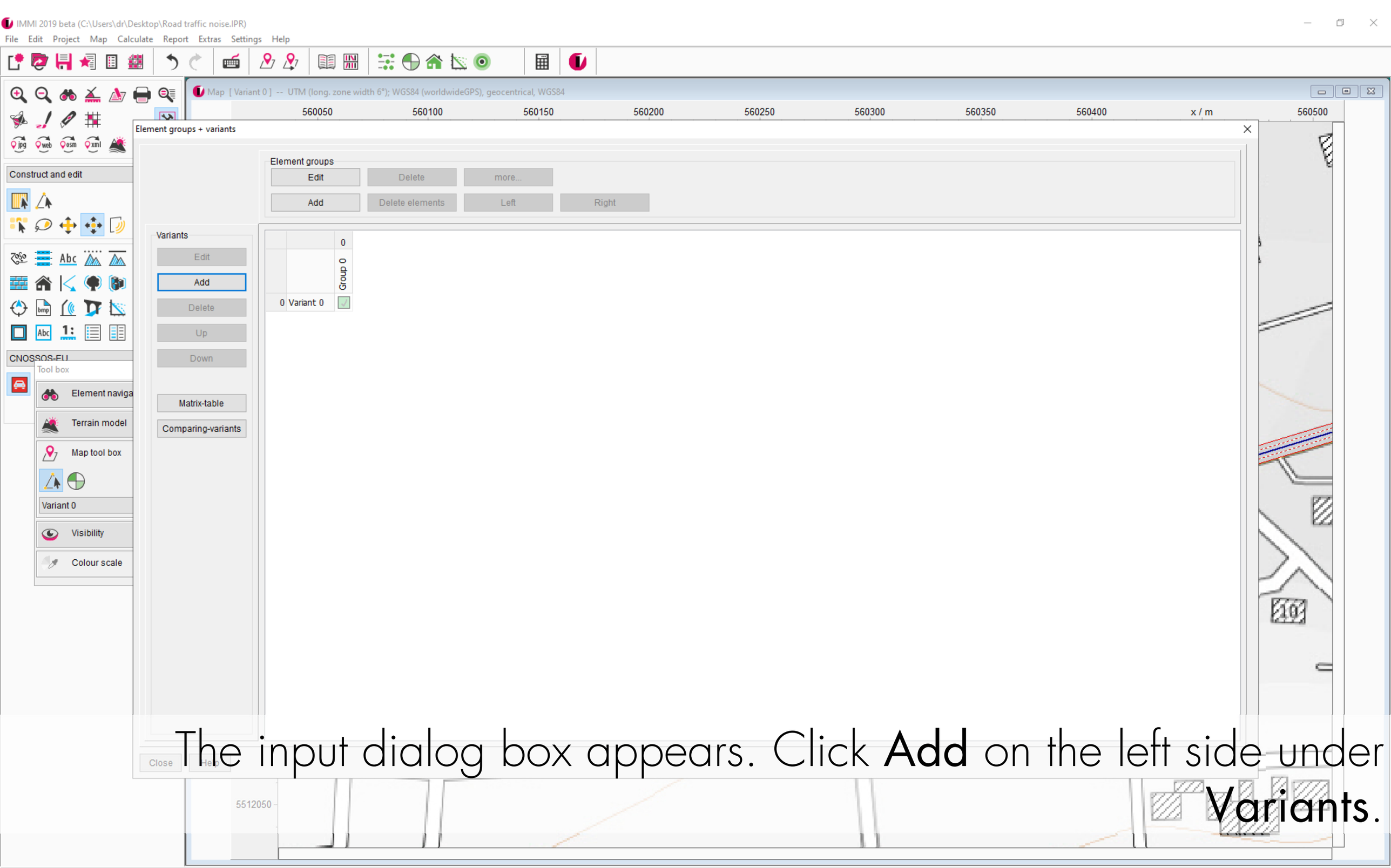
Variant 0

Visibility

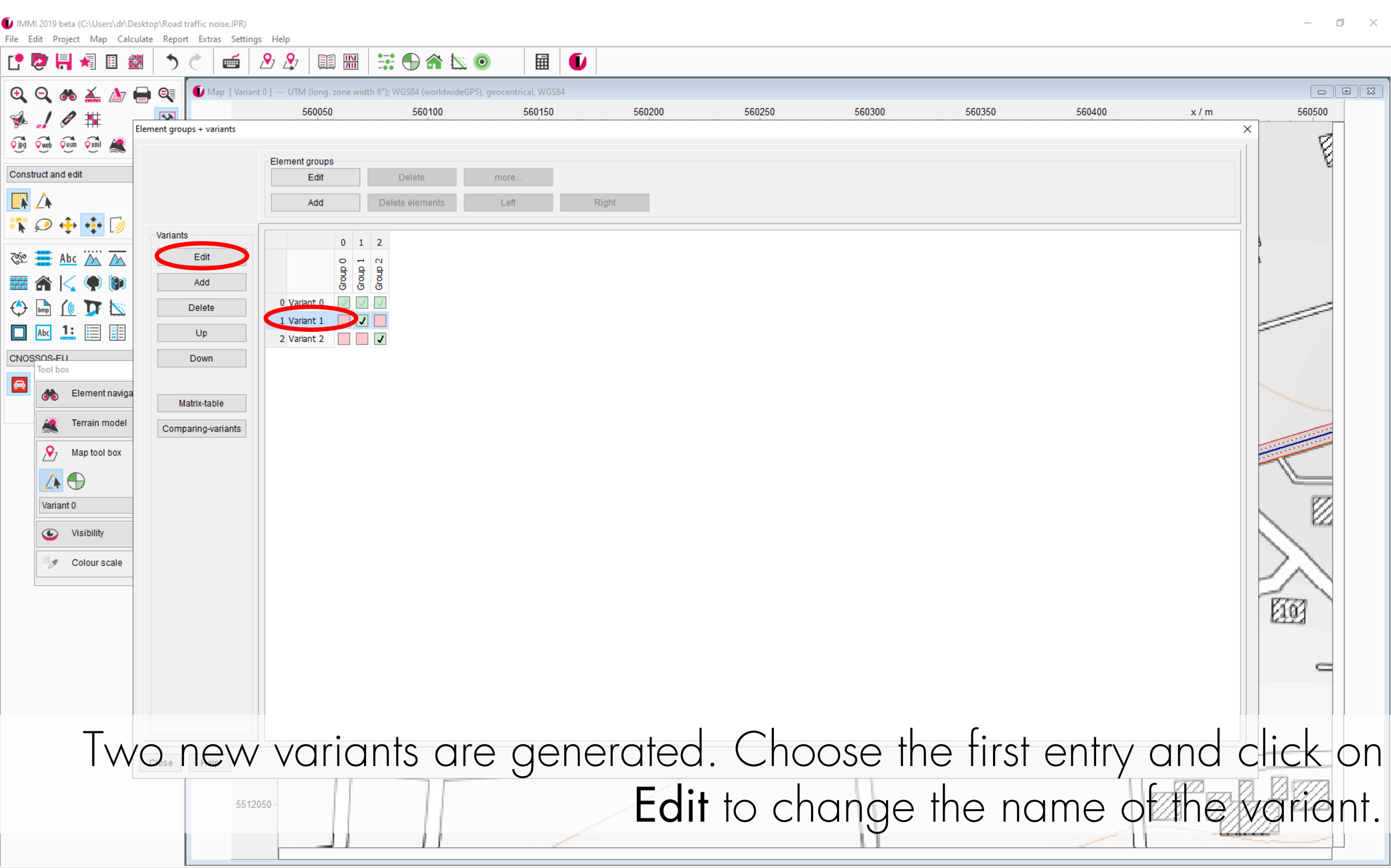
Colour scale

The definition of variants starts in the menu <**Project I Element groups + Variants** > or with the corresponding icon.

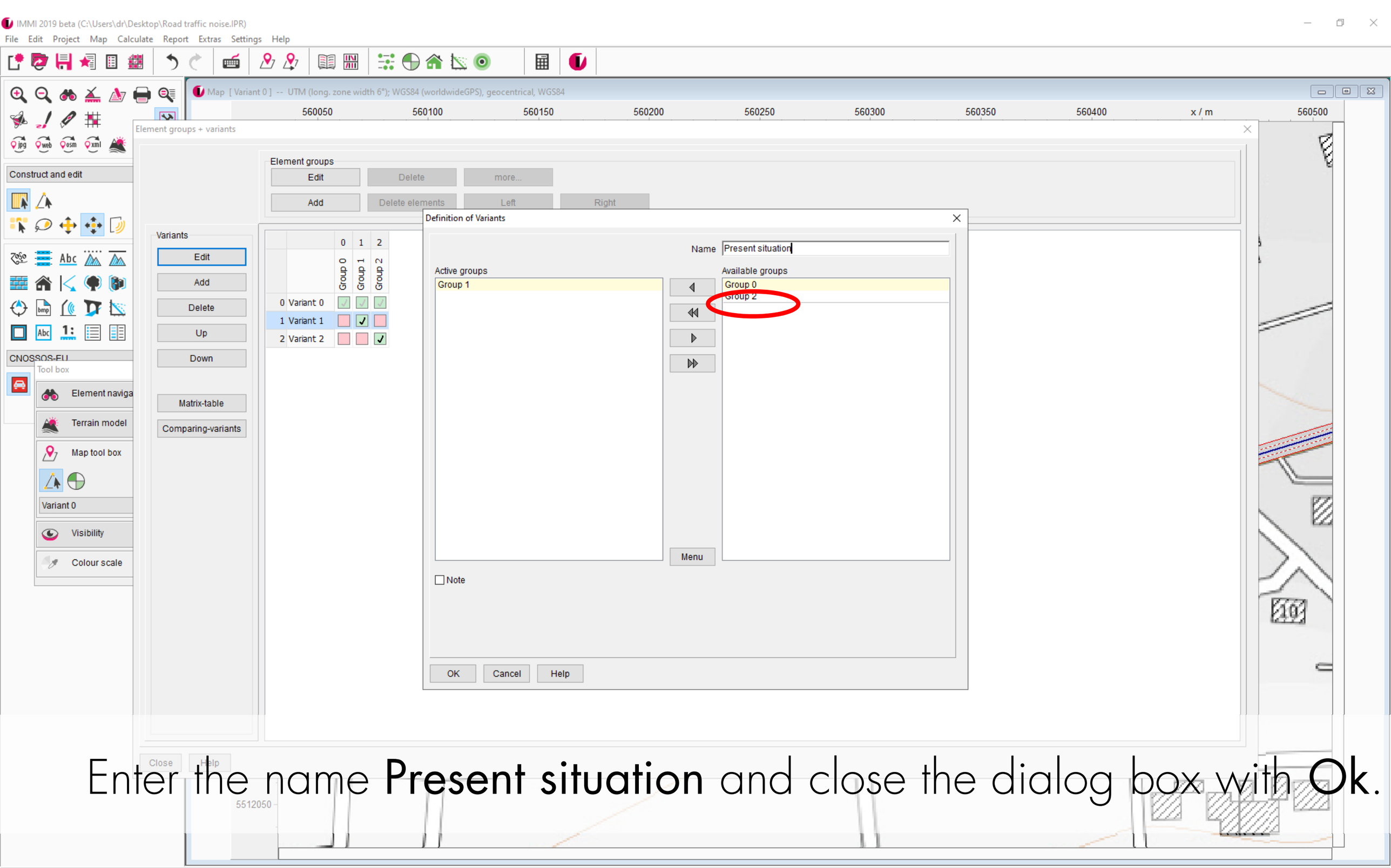
x:560193.8 y:5512322.1 z: 0.0



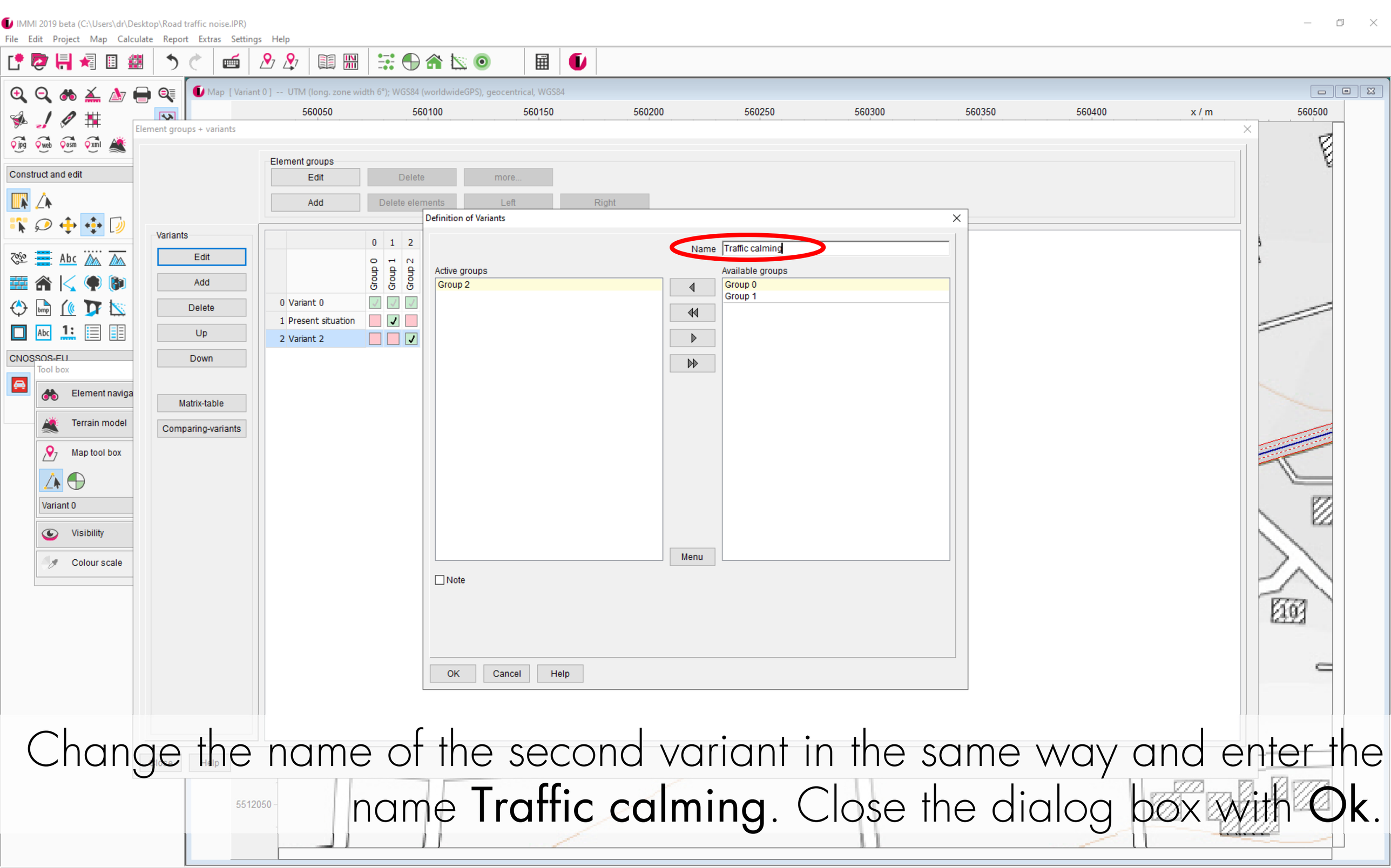
The input dialog box appears. Click **Add** on the left side under **Variants**.



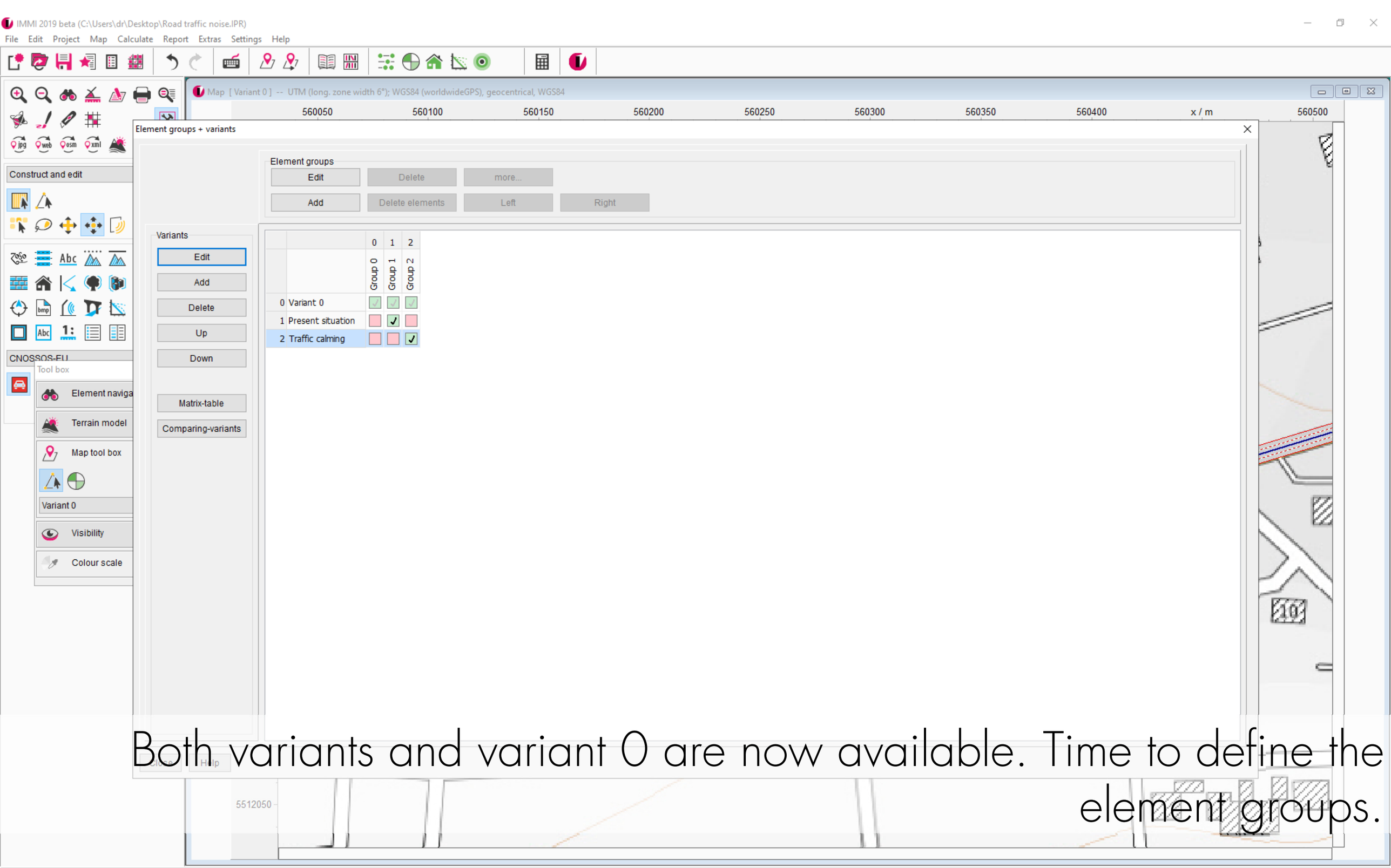
Two new variants are generated. Choose the first entry and click on **Edit** to change the name of the variant.



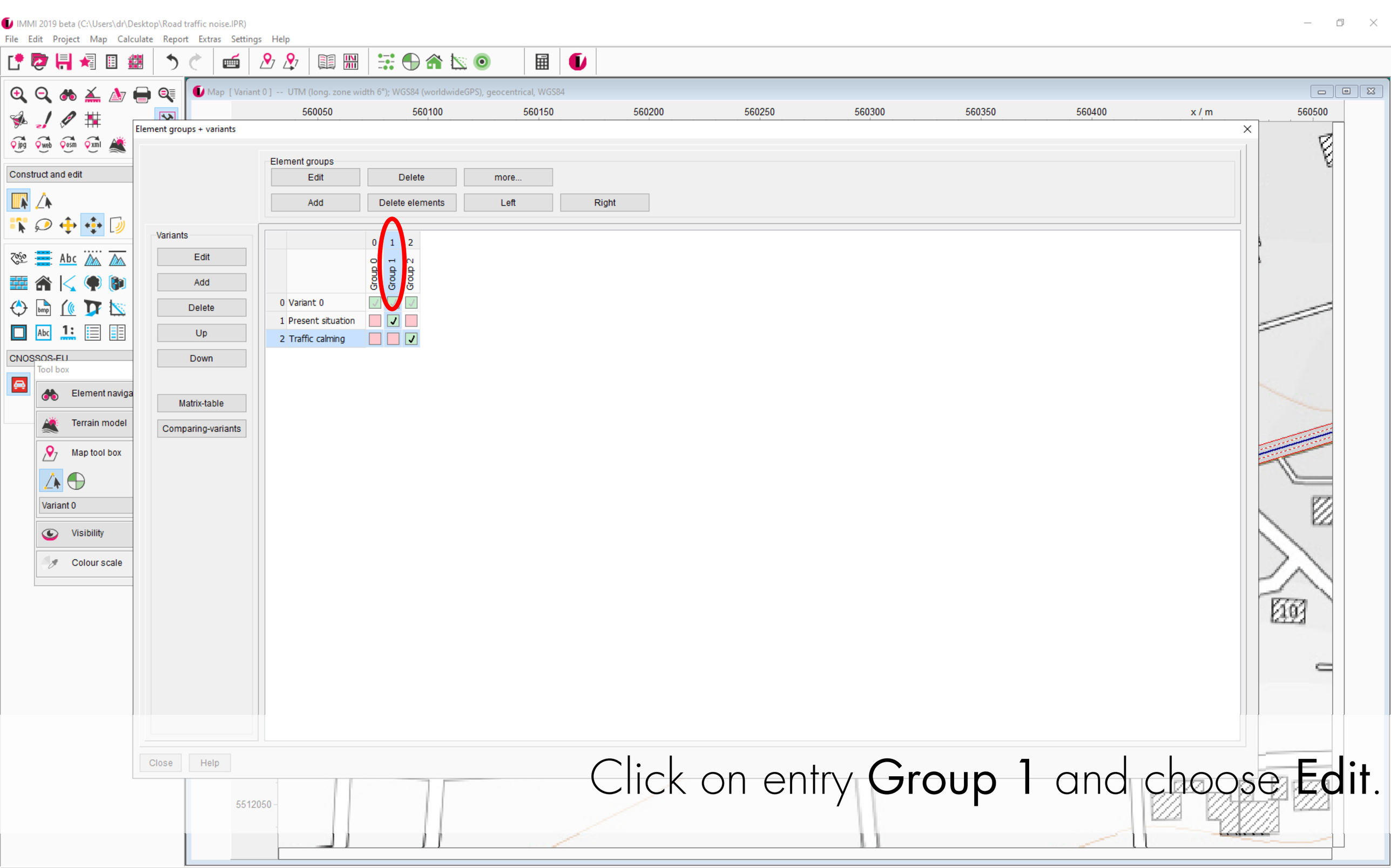
Enter the name **Present situation** and close the dialog box with **Ok**.



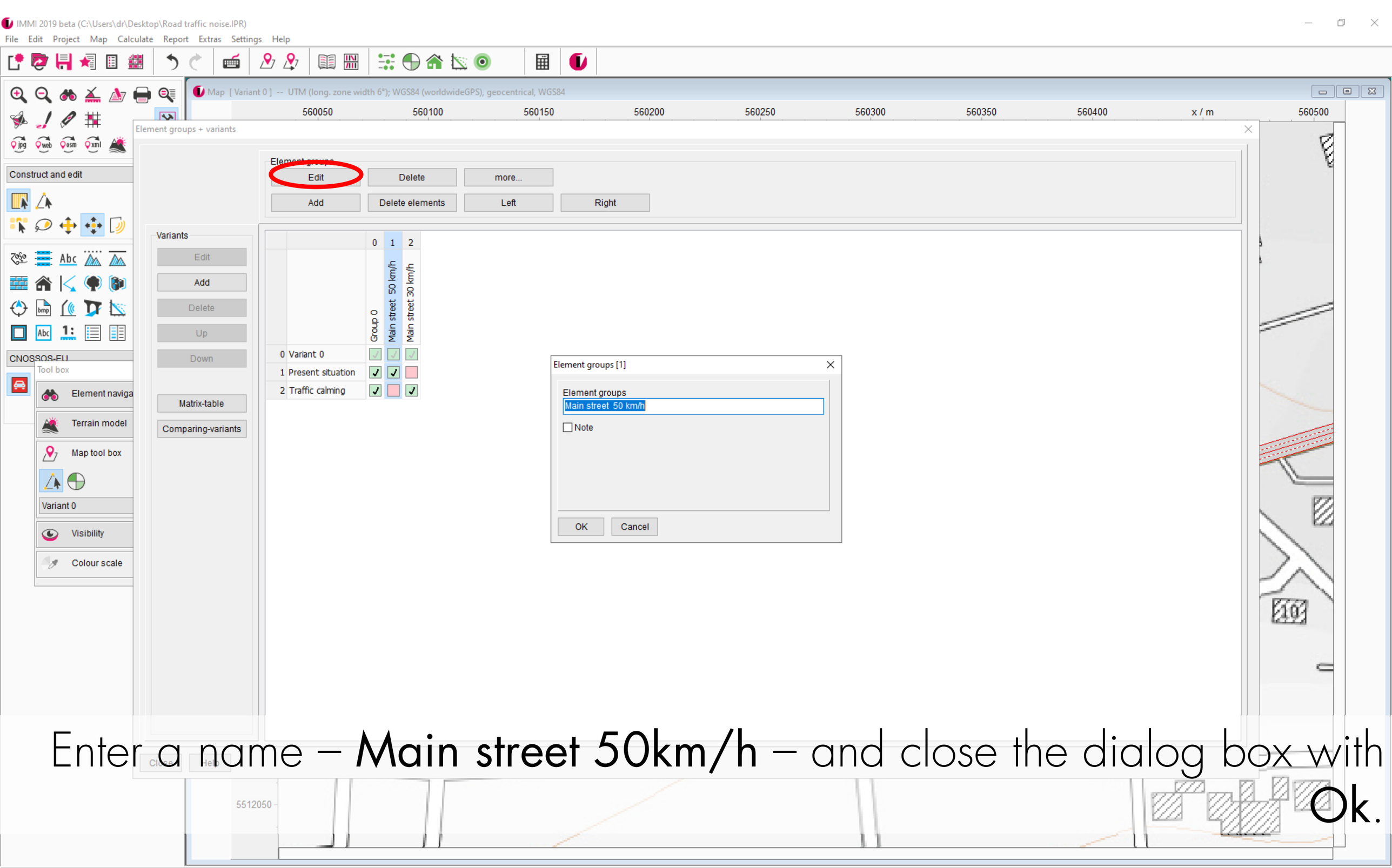
Change the name of the second variant in the same way and enter the name **Traffic calming**. Close the dialog box with **Ok**.



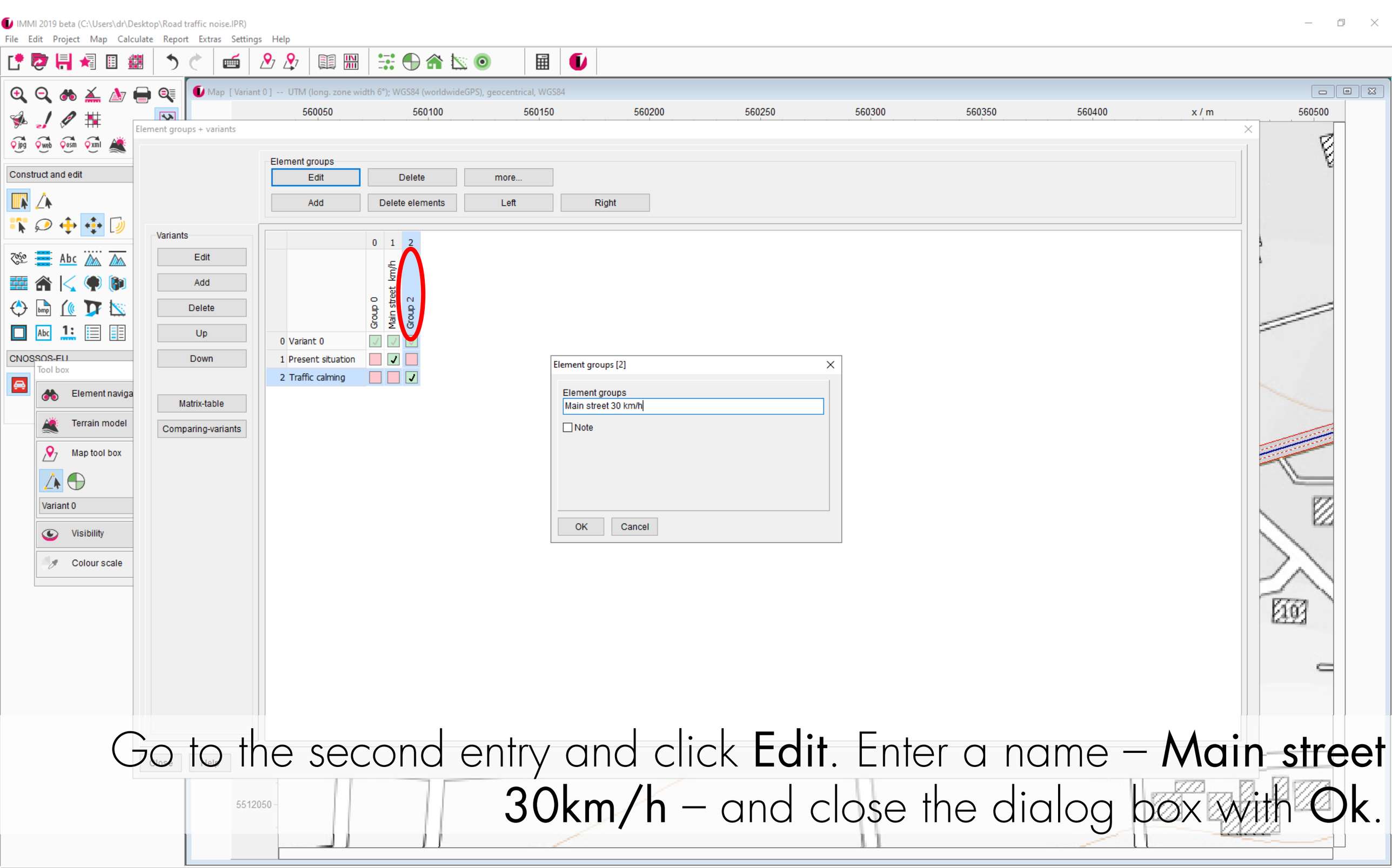
Both variants and variant 0 are now available. Time to define the element groups.



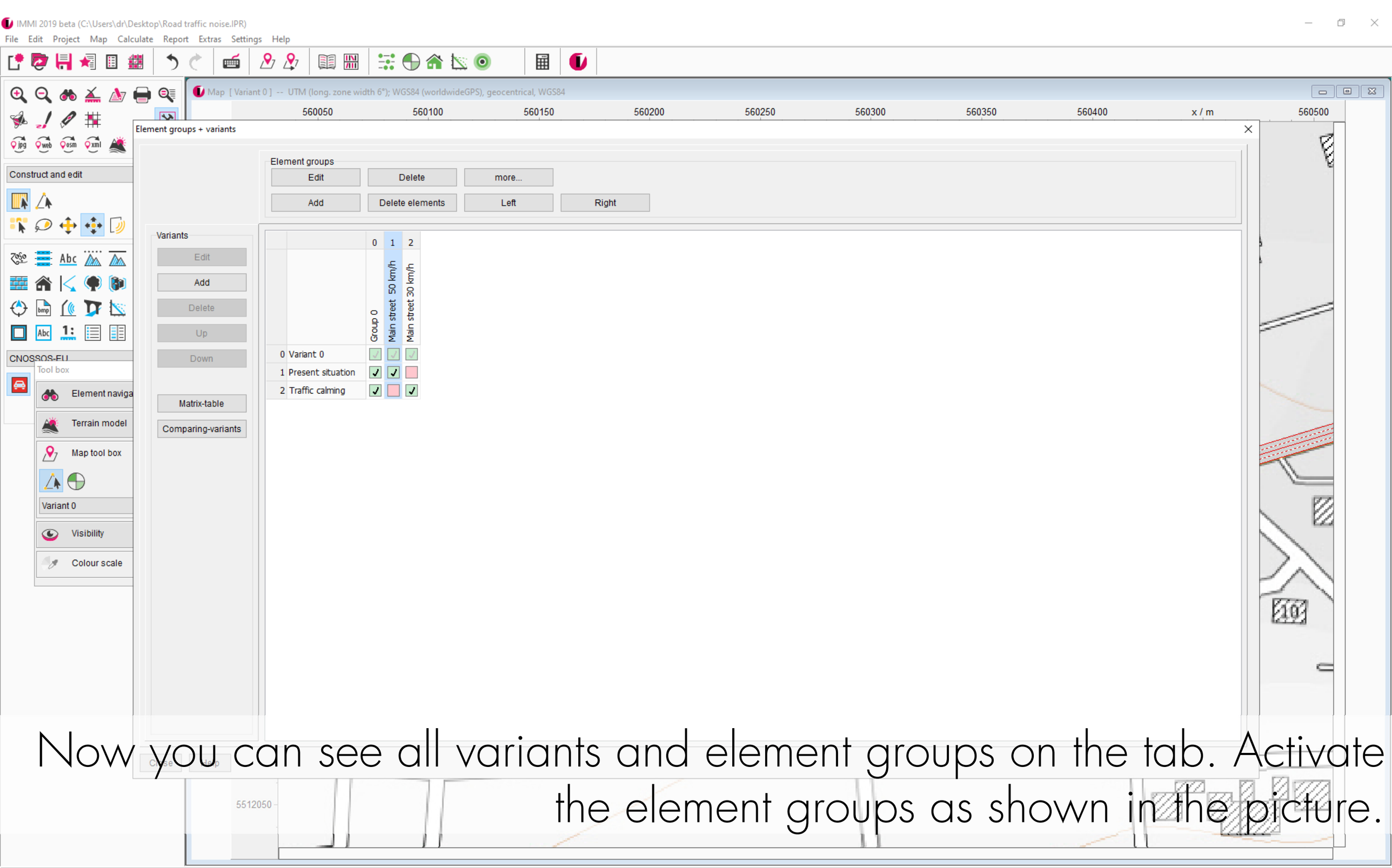
Click on entry **Group 1** and choose **Edit**.



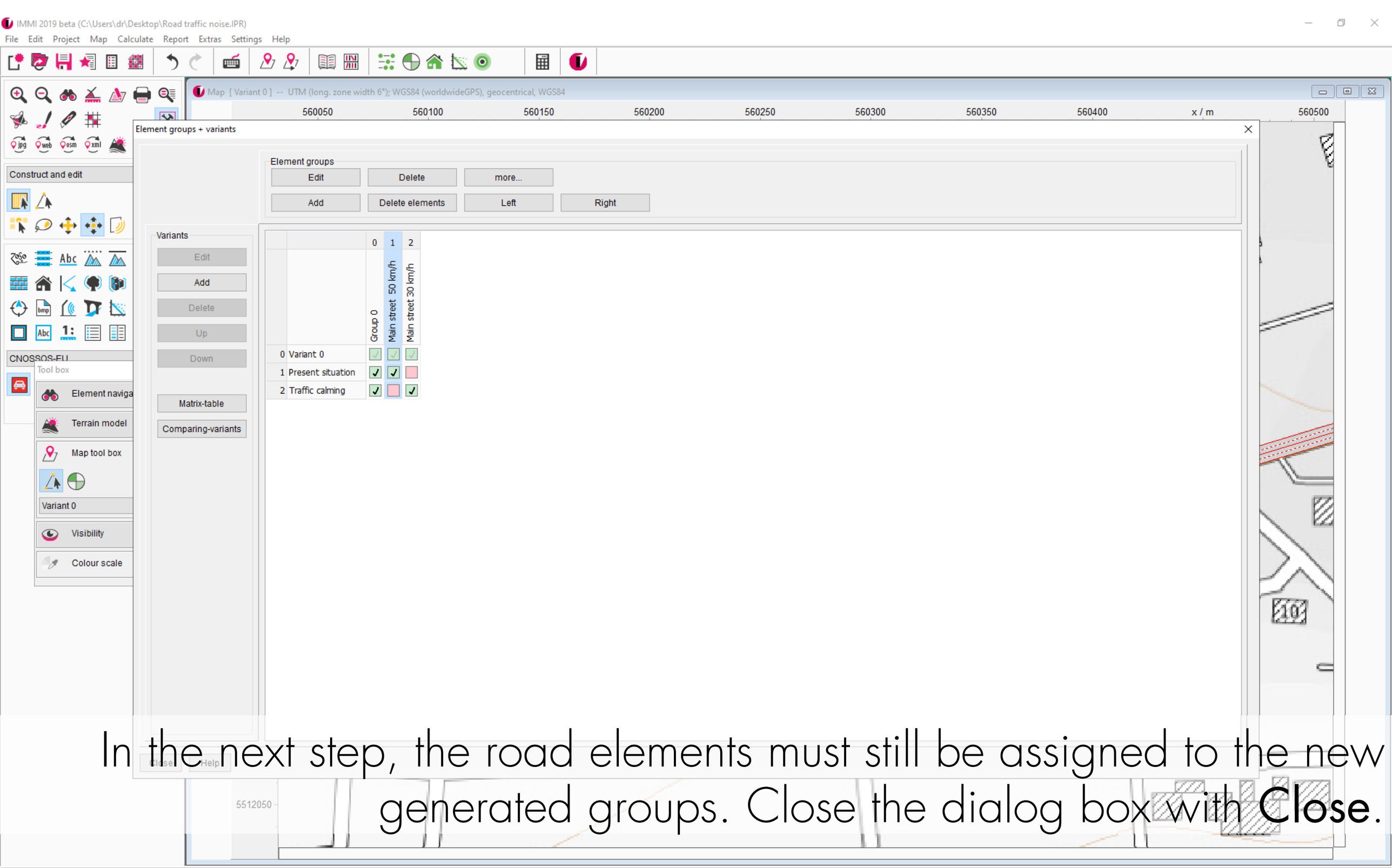
Enter a name – **Main street 50km/h** – and close the dialog box with **Ok**.



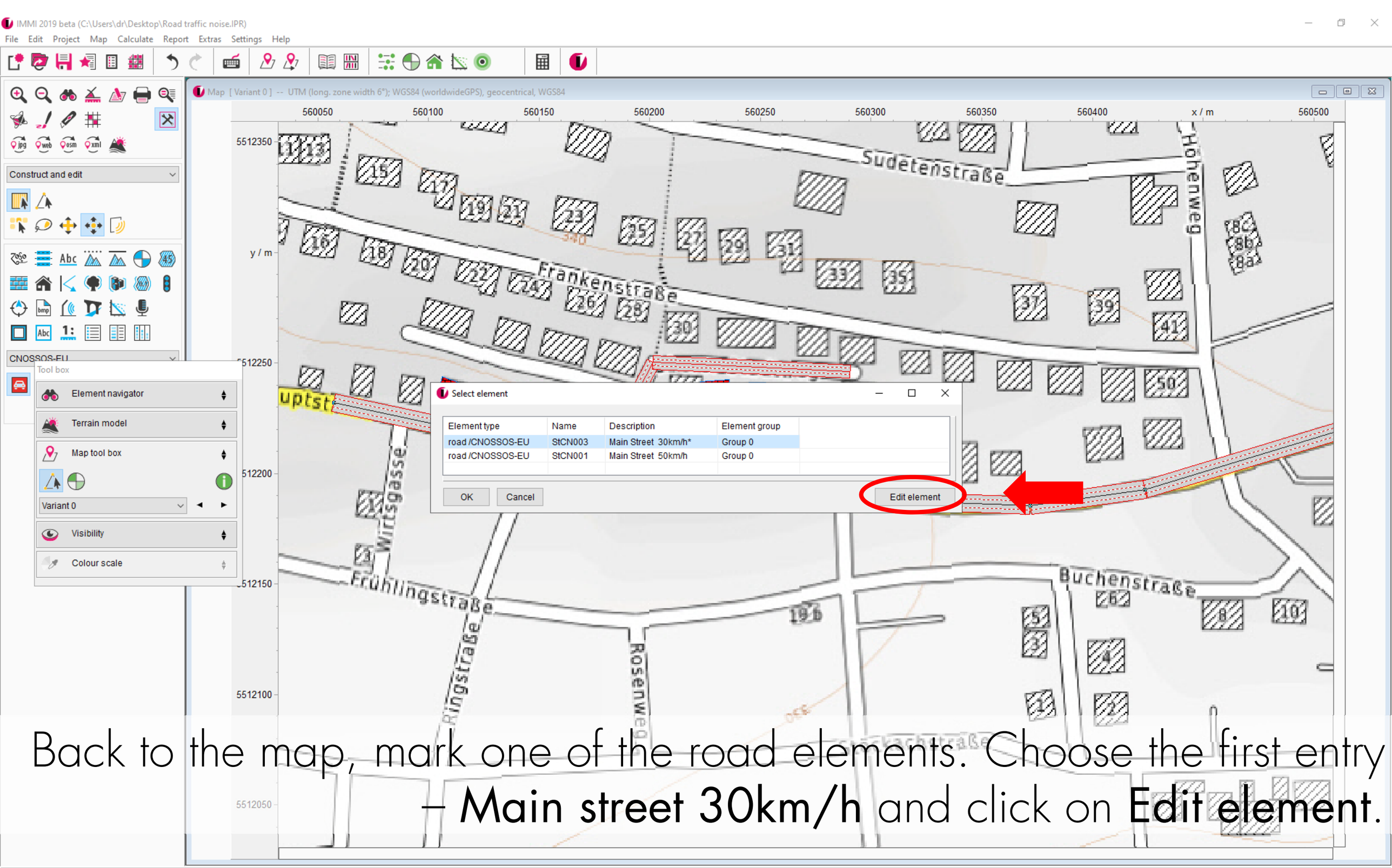
Go to the second entry and click **Edit**. Enter a name – **Main street 30km/h** – and close the dialog box with **Ok**.



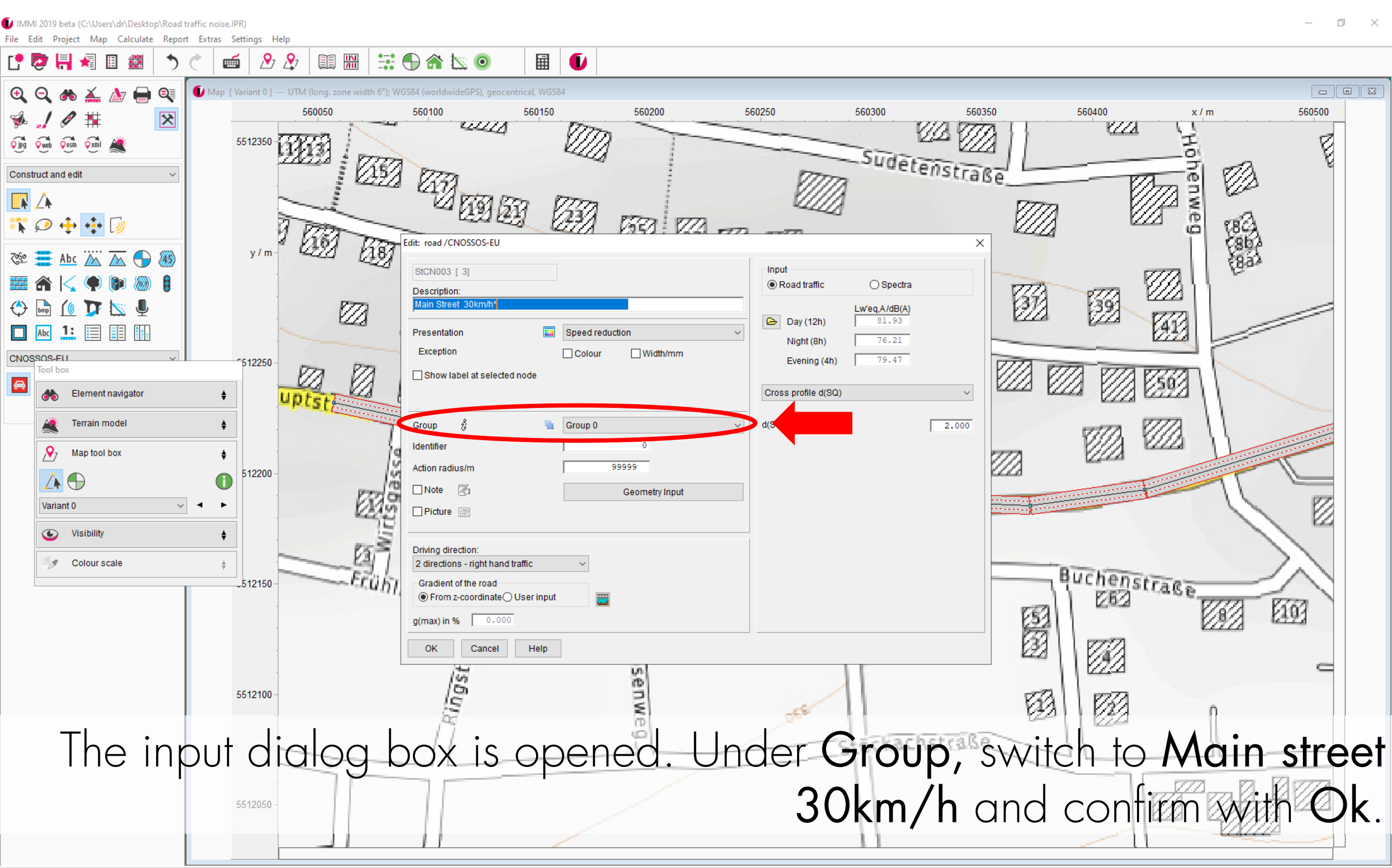
Now you can see all variants and element groups on the tab. Activate the element groups as shown in the picture.



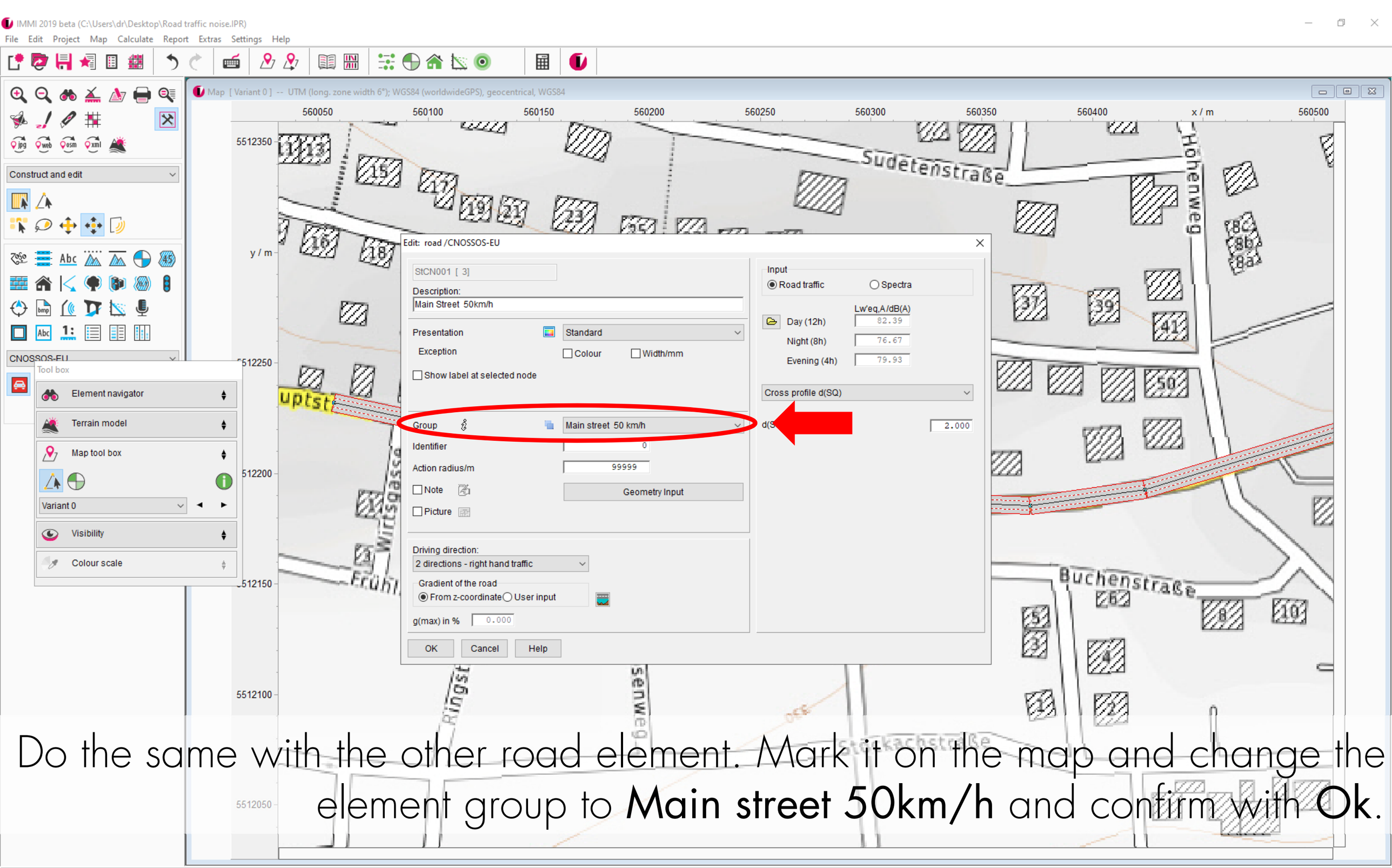
In the next step, the road elements must still be assigned to the new generated groups. Close the dialog box with **Close**.



Back to the map, mark one of the road elements. Choose the first entry – **Main street 30km/h** and click on **Edit element**.



The input dialog box is opened. Under **Group**, switch to **Main street 30km/h** and confirm with **Ok**.



Do the same with the other road element. Mark it on the map and change the element group to **Main street 50km/h** and confirm with **Ok**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Traffic calming] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Tool box

Element navigator

Terrain model

Map tool box

Traffic calming

Visibility

Colour scale

Construct and edit

CNOSSOS-EU

Within the **Map tool box** you can now switch between the different variants using the arrow icons.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Traffic calming] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Tool box

Element navigator

Terrain model

Map tool box

Traffic calming

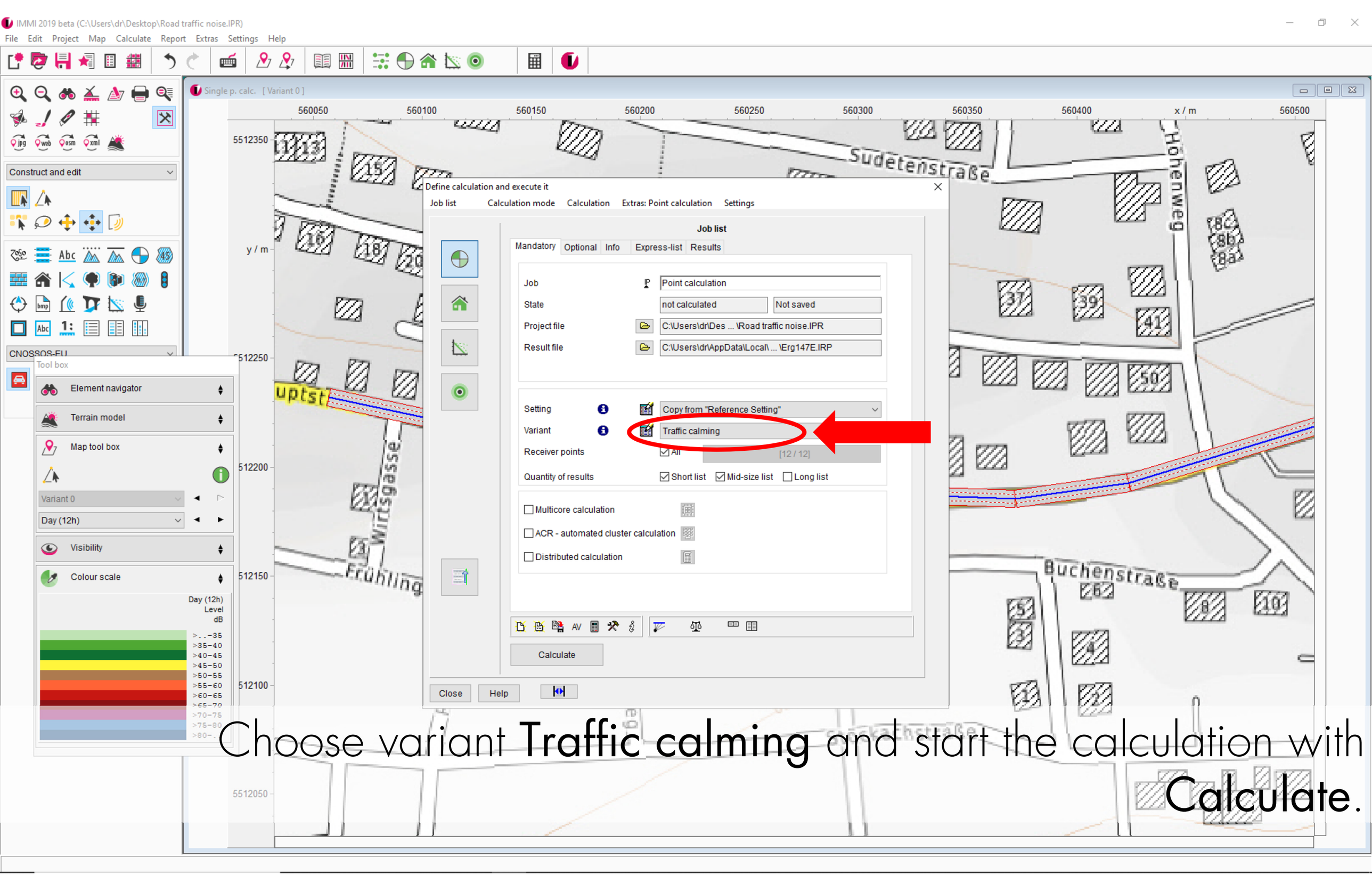
Visibility

Colour scale

Construct and edit

CNOSSOS-EU

Now it is time to calculate the receiver points. Open the calculation dialog box by clicking on the corresponding icon.



Choose variant **Traffic calming** and start the calculation with **Calculate**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Traffic calming]

Define calculation and execute it

Job list Calculation mode Calculation Extras: Point calculation Settings

Job list

Mandatory Optional Info Express-list Results

Clic a receiver point: further information will be displayed	
Job:	Point calculation
Project:	Road traffic noise.IPR
Project:	Erg147E.IRP
Setting	Copy from "Reference Setting"
Variant	Traffic calming

		Day (12h)	Evening 4h	Night (8h)	
	Exceeding	9	9	10	
IPkt001	Ring street 1 1 GF West	65.23	62.58	59.34	
IPkt002	Ring street 1 1 UF1West	64.98	62.32	59.08	
IPkt003	Ring street 1 1 UF2West	64.76	62.08	58.84	
IPkt004	Ring street 1 2 GF North	69.10	66.52	63.27	
IPkt005	Ring street 1 2 UF1North	68.63	66.03	62.78	
IPkt006	Ring street 1 2 UF2North	68.07	65.45	62.21	
IPkt007	Ring street 1 3 GF East	63.84	61.28	58.02	
IPkt008	Ring street 1 3 UF1East	63.58	61.01	57.76	
IPkt009	Ring street 1 3 UF2East	63.42	60.84	57.58	
IPkt010	Ring street 1 4 GF South	43.08	40.43	37.19	
IPkt011	Ring street 1 4 UF1South	42.79	40.14	36.89	
IPkt012	Ring street 1 4 UF2South	51.02	48.37	45.08	

Calculate Unlock

Close Help

Tool box

Element navigator

Terrain model

Map tool box

Traffic calming

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB

>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80
>80-..

Sudetenstraße

Höhenweg

Buchenstraße

Stockachstraße

Frühlingstraße

x / m

y / m

560050 560100 560150 560200 560250 560300 560350 560400 560500

5512350 512250 512200 512150 512100 5512050

After calculating you can see the results in a list.

x:560086.2 y:5512358.9 z: 0.0

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Single p. calc. Day (12h) [Traffic calming]

Define calculation and execute it

Job list Calculation mode Calculation Extras: Point calculation Settings

Job list

Mandatory Optional Info Express-list Results

Clic a receiver point: further information will be displayed	
Job:	Point calculation
Project:	Road traffic noise.IPR
Project:	Erg147E.IRP
Setting	Copy from "Reference Setting"
Variant	Traffic calming

		Day (12h)	Evening 4h	Night (8h)	
	Exceeding	9	9	10	
	street 1 1 GF West	65.23	62.58	59.34	
IPkt002	Ring street 1 1 UF1West	64.98	62.32	59.08	
IPkt003	Ring street 1 1 UF2West	64.76	62.08	58.84	
IPkt004	Ring street 1 2 GF North	69.10	66.52	63.27	
IPkt005	Ring street 1 2 UF1North	68.63	66.03	62.78	
IPkt006	Ring street 1 2 UF2North	68.07	65.45	62.21	
IPkt007	Ring street 1 3 GF East	63.84	61.28	58.02	
IPkt008	Ring street 1 3 UF1East	63.58	61.01	57.76	
IPkt009	Ring street 1 3 UF2East	63.42	60.84	57.58	
IPkt010	Ring street 1 4 GF South	43.08	40.43	37.19	
IPkt011	Ring street 1 4 UF1South	42.79	40.14	36.89	
IPkt012	Ring street 1 4 UF2South	51.02	48.37	45.08	

Calculate Unlock

Close Help

Tool box

Element navigator

Terrain model

Map tool box

Traffic calming

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB

>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80

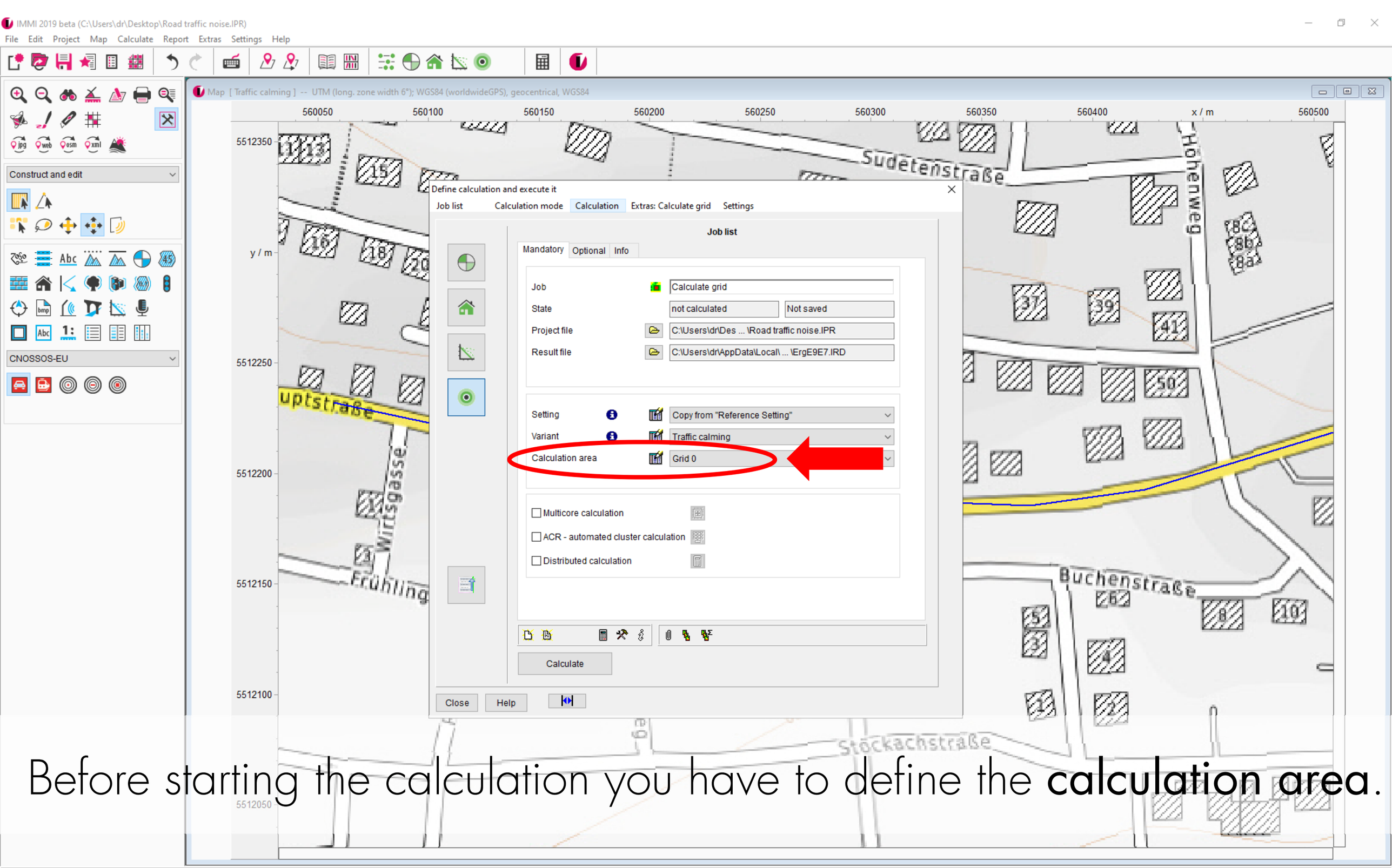
560050 560100 560150 560200 560250 560300 560350 560400 x / m 560500

5512350 y / m 512250 512200 512150 512100 5512050

Sudetenstraße Höhenweg Buchenstraße Frühling Wirtsgasse Steckenstraße

The next step is to do a grid calculation. Click on the corresponding icon.

x:560086.2 y:5512358.9 z: 0.0



Before starting the calculation you have to define the **calculation area**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Traffic calming] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Define calculation and execute it

Job list | Calculation mode | Calculation | Extras: Calculate grid | Settings

Job list

Mandatory | Optional | Info

Job: Calculate grid

State: not calculated | Not saved

Project file: C:\Users\dr\Des ... \Road traffic noise.IPR

Result file: C:\Users\dr\AppData\Local\ ... \ErgE9E7.IRD

Setting: Copy from "Reference Setting"

Variant: Traffic calming

Calculation area: Gri

Multicore calculation

ACR - automated cluster calculation

Distributed calculation

Calculate

Close | Help

Click on the corresponding icon.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Traffic calming] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Construct and edit

CNOSSOS-EU

Define calculation and execute it

Job list | Calculation mode | Calculation | Extras: Calculate grid | Settings

Job list

Mandatory | Optional | Info

Job: Calculate grid

State: not calculated | Not saved

Calculate

Close | Help

Calculation area

Calculation area select:

Name	Type	XMin /m	XMax /m	YMin /m	YMax /m	nx	ny	dx /m	dy /m	z /m
Grid 0	Work area	0.00	1000.00	0.00	1000.00	51	51	20.00	20.00	4.00R

Edit ... | Add ... | Delete | Default | Up | Down

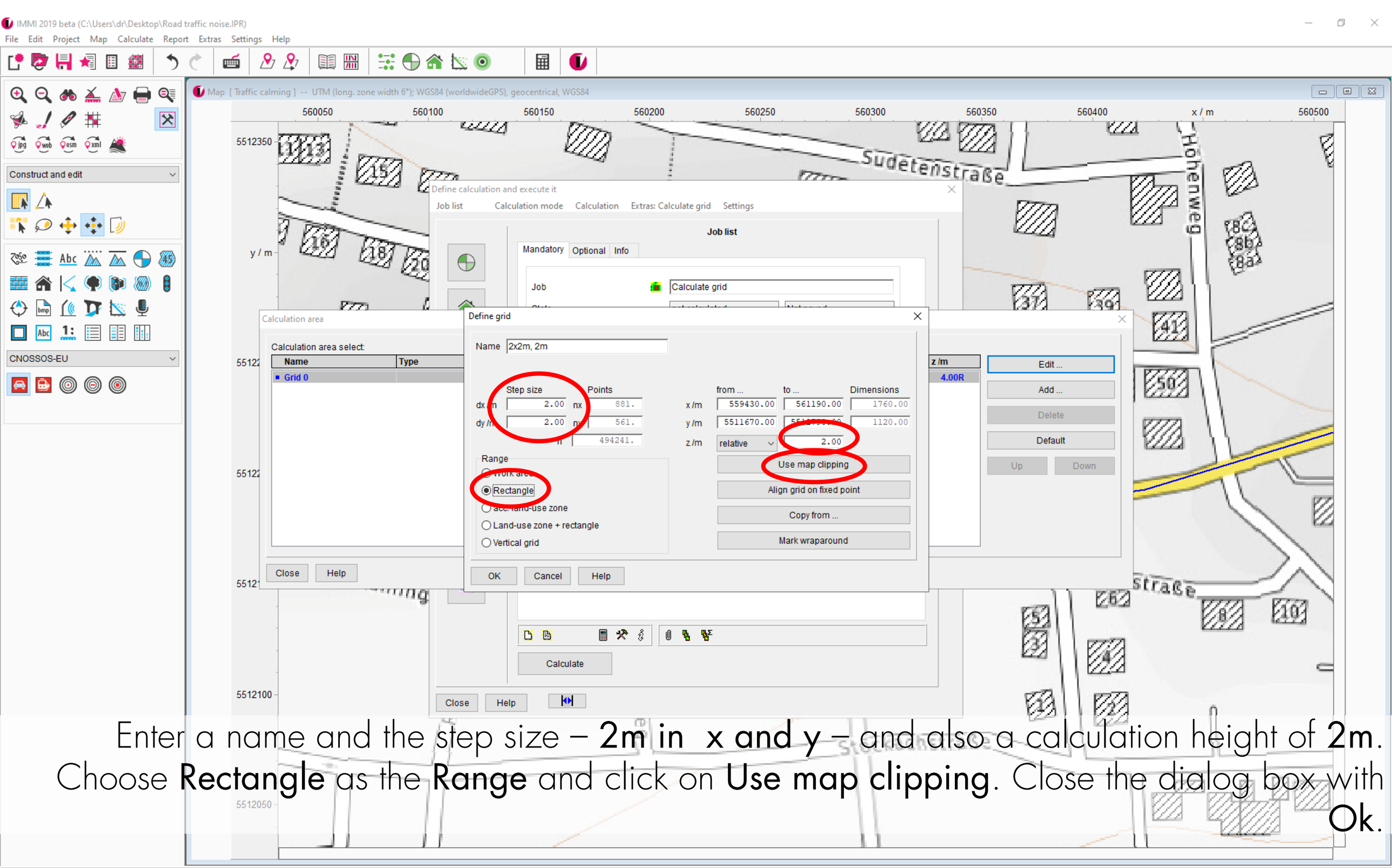
Close | Help

560050 560100 560150 560200 560250 560300 560350 560400 x / m 560500

5512350 y / m 5512100 5512050

Sudetenstraße Höhenweg Stockachstraße

Click **Edit** ....



Enter a name and the step size – **2m in x and y** – and also a calculation height of **2m**. Choose **Rectangle** as the **Range** and click on **Use map clipping**. Close the dialog box with **Ok**.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Map [Traffic calming] -- UTM (long. zone width 6°); WGS84 (worldwideGPS), geocentrical, WGS84

Define calculation and execute it

Job list | Calculation mode | Calculation | Extras: Calculate grid | Settings

Job list

Mandatory | Optional | Info

Job: Calculate grid

State: not calculated | Not saved

Project file: C:\Users\dr\Des ... \Road traffic noise.IPR

Result file: C:\Users\dr\AppData\Local\ ... \ErgE9E7.IRD

Setting: Copy from "Reference Setting"

Variant: Traffic calming

Calculation area: 2x2m, 2m

Multicore calculation

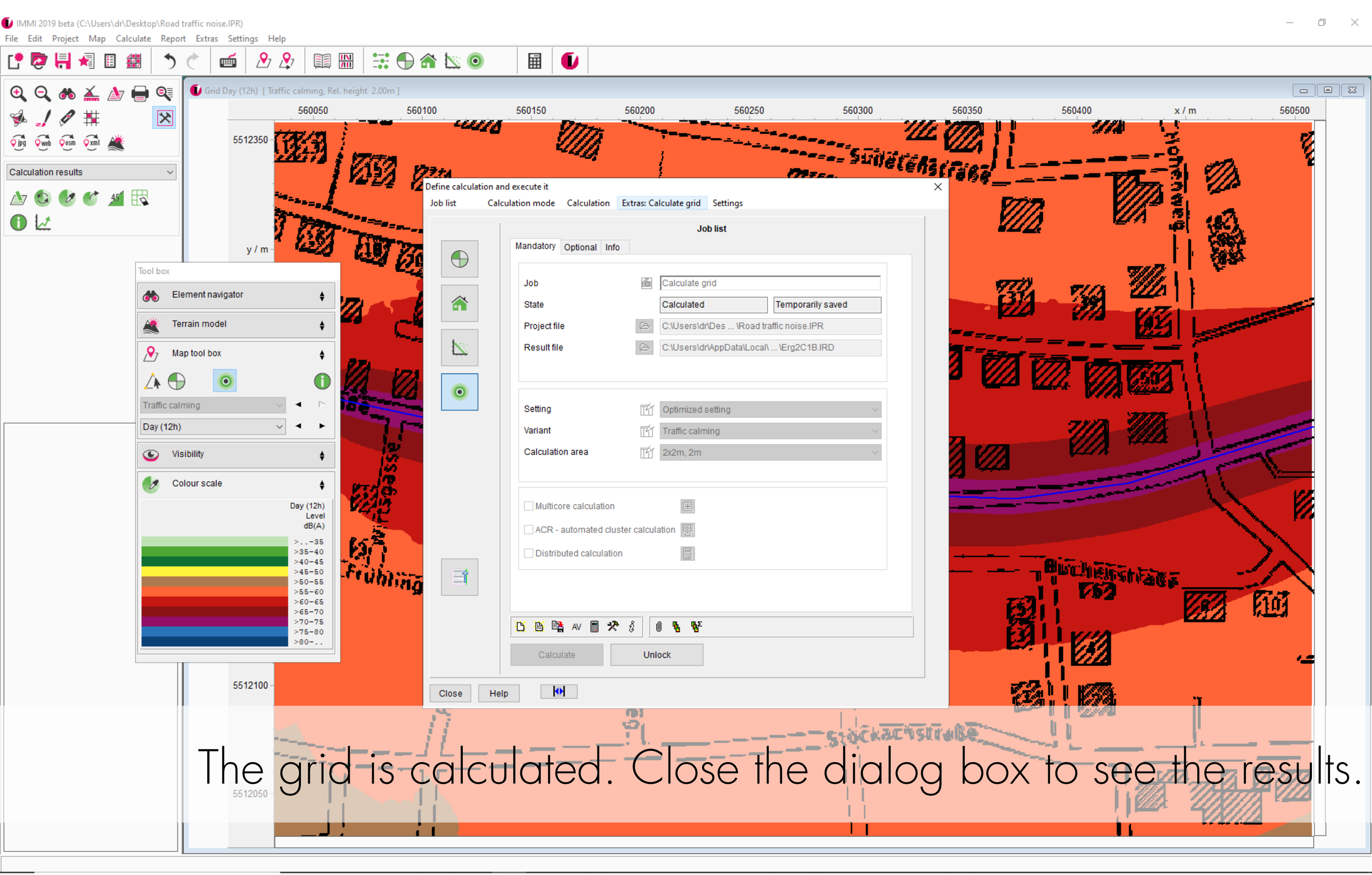
ACR - automated cluster calculation

Distributed calculation

Calculate

Close | Help

Start the calculation by clicking **Calculate**.



The grid is calculated. Close the dialog box to see the results.

IMMI 2019 beta (C:\Users\dr\Desktop\Road traffic noise.IPR)

File Edit Project Map Calculate Report Extras Settings Help

Grid Day (12h) [Traffic calming, Rel. height 2.00m]

Calculation results

Tool box

Element navigator

Terrain model

Map tool box

Traffic calming

Day (12h)

Visibility

Colour scale

Day (12h)
Level
dB(A)

>..-35
>35-40
>40-45
>45-50
>50-55
>55-60
>60-65
>65-70
>70-75
>75-80
>80-..

560050 560100 560150 560200 560250 560300 560350 560400 x / m 560500

5512350 y / m 5512100 5512050

Well done!

x: 560193.1 y: 5512319.5 z: 2.0 L1: 59.2 L2: 56.3 L3: 53.1 L4: 61.2

IMMI

Stay tuned!

You will find more examples – e.g. for industrial noise – in the IMMI online help!

Watch the web tutorials on our website:

https://www.immi.eu/en/support/web-tutorial.html